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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Story of the Week
Thoughts for the Week
You Can Get In, But You Can't Get Out
What Some People Won't Do for a Cup of Coffee
Gypped Worthingtonian
Out of Our Mailbag

Story of the Week

Happy and potted, a beleaguered businessman wandered into an evening church service. He admired the preacher at first sight, and blithely dropped a hundred dollar bill into the collection plate.

Following the service he congratulated the parson.

"Best damn sermon I ever heard," he hiccupped.

"I won't tolerate that kind of language in my church," fumed the minister.

"Shucks, I'm sorry, sir. If it will make you feel better, I'd like to say that I put a hundred dollar bill in the collection."

Preacher's eyebrows shot upward.

"The hell you did!" he ejaculated.

Thoughts for the Week

Those people who try to live within their incomes are trying to foul up prosperity.

Despite the growing popularity of frozen juices, most men like to squeeze their own tomatoes.

If you want a job done give it to a busy man. He'll have his secretary do it.

You Can Get In, But You Can't Get Out

Disgusting revelations of bribery in the radio-TV disc jockey "business" comprise no large surprise to this columnist.

Payolas for platter spinners, corruption of our children's musical tastes, jukebox terrorism by gangsters . . . the record business is in a mess.

The Taubeneck family, for example, has engaged in a private "cold war" with a subscription record club for an exasperating nine months.

This is one of those deals whereby you receive a new record album every month *unless* you write that you don't want it.

Believe us, friends, you'd better return that "don't want" form back *fast*—or you'll get the record anyway.

This happened to us so many

(Concluded on Page 12, Col. 1)

Carrier Bows Air Purifier For Homes

NEW YORK CITY — A new air conditioning development claimed to provide "the first genuinely practical residential device for effective odor removal, winter humidification, and constant-efficiency air cleansing" was introduced last week by Carrier Corp.

Called the Carrier "Automatic Air Purifier," it will make possible continuous 12-month control of the quality, humidity, and purity of indoor air as well as its temperature, according to the announcement.

It will be marketed next spring for installation with new central air conditioning systems in homes and smaller commercial establishments or as an addition to existing systems.

"It will absorb all types of odors commonly encountered in the household, including those from smoking and cooking, and discharge them outdoors," said Russell Gray, vice president of

(Concluded on Page 4, Col. 1)

NWAHACA Votes Funds To Broaden 1960 Silver Shield Operation and Promotion

By C. Dale Mericle

ST. LOUIS — Funds for a greatly increased program to upgrade heating and air conditioning installations have been voted by trustees of National Warm Air Heating & Air Conditioning Association.

This action, taken at the group's 46th annual convention here Dec. 2 to 4, will expand Silver Shield operations and step up publicity aimed at the consumer and other buying influences.

Details will be disclosed in the near future, it was indicated.

Just about all possible bases were touched in the three-day convention, which featured discussions of electric heat, national party politics, labor and tax legislation, sales methods and recruiting of salesmen, heat pumps, construction forecasts, money trends, and also the first announcement and explanation of a new short-form method claimed to cut bid preparation time as much as 50% while keeping residential load calculations to within 6% accuracy.

The convention marked the official retirement of George Boeddener after nearly 20 years as managing director. He is succeeded by James M. Martin.

Harry C. Gurney of Janitrol took office as president for the coming year, succeeding Tom Byrd of Lau Blower. Other newly-elected officers include Don Winegardner of the Majestic Co., first vice president; H. P. Mueller, Jr., of Mueller Climatrol, second vice president, and Martin, secretary-treasurer.

Joining the board of trustees are Paul Augenstein of Airtemp, R. N. Campbell of Westinghouse and C. A. Olsen, Robert Leigh of Air Control Products, and Kent Wilson of Minneapolis-Honeywell.

Unusual feature of the NWAHACA convention was the appearance at luncheon sessions on successive days of the national committee chairmen of the Democratic and Republican parties. Paul M. Butler spoke for the Democrats the first day; Sen. Thruston B. Morton for the Republicans on the second day.

(Judging by their speeches, the 1960 presidential campaign

(Concluded on Page 31, Col. 1)

Adopts Code of Ethics

NHAW Raps 5-Yr. Warranty

ST. LOUIS—After more than a year of deliberation, resolutions condemning the five-year warranty and adopting a recommended code of ethics were favorably approved by the North-american Heating & Airconditioning Wholesalers Association at its 13th annual international convention held at the Chase hotel here Nov. 29 to Dec. 2.

The warranty resolution read in part: ". . . we as wholesalers and members of NHAW advocate that the air conditioning manufacturers discontinue the five-year warranty as it is now constituted and substitute a standard one-year warranty from date of installation against manufacturing defects in air conditioning products, and that the staff of this association be directed to contact these manufacturers to inform them of this

(Concluded on Page 30, Col. 1)

'59 Unitary Shipments Set Fast Pace

WASHINGTON, D. C.—Manufacturers' shipments of unitary air conditioners continue to rise at an ever increasing pace.

Shipments for the third quarter were up 67% over the equivalent 1958 period, according to figures just released by the Air-Conditioning & Refrigeration Institute's Unitary Air Conditioner Section.

The release states that shipments for the first nine months of 1959 totaled 234,444 units, up 47% over the first nine months of 1958.

Shipments of residential and light commercial units — under 65,000 B.t.u.h. — accounted for 84% of the total shipments, with shipments in the 33,000 to 41,999 B.t.u.h. size range totaling 81,446 units to more than double shipments in any other size range.

Heat pump units showed a percentage gain more than double that of overall unitary equipment—up 108% to 25,834 units for the first nine months. More than 60% of the heat pump units shipped in this period were self-contained.

Split systems also showed a pronounced gain, up 76% to 126,076 condensing units in the

(Concluded on Back Page, Col. 1)

Gas Furnaces Move Briskly, Too

NEW YORK CITY — Manufacturers of gas-fired central heating equipment entered the final quarter of the year with some of the highest sales totals in their history.

According to the Gas Appliance Manufacturers Association, unit shipments of furnaces already have exceeded the highest previous full-year total and the 1959 total for all types is certain to set a new record.

GAMA's monthly telegraphic survey of manufacturers indicates 175,700 units of all types —furnaces, boilers, and conversion burners—were shipped during October. This was 20.3% more than the 146,000 units dispatched in the same month of last year.

In the first ten months of this year, 1,158,800 units were sent to market, a 24% improvement over the 934,300 shipped in the same period of 1958. This year's ten-month total stands only 14,800 units short of the 1955

(Concluded on Back Page, Col. 3)

Nathan Kramer Dies Of Heart Attack

MORRISVILLE, Pa.—Nathan Kramer, 71, founder and president of Kramer Trenton Co., died Dec. 3 of a heart attack at his home.

He founded the company in 1914 and served as president since then. Kramer Trenton is a pioneer manufacturer of heat transfer equipment and has also branched into other refrigeration and air conditioning products.

(Concluded on Page 30, Col. 2)

Maybe We're Doing All Right

(Conscience of the Industry Editorial by George F. Taubeneck)

SCIENTIST Garrett Hardin of the University of California recently published an intriguing thesis entitled: "In Praise of Waste."

That title is a real shocker—especially since it comes from a biologist and mathematician. Nevertheless, contents of his book make believably good sense.

Dr. Hardin has earned world-wide fame as a biologist. Hence, it is understandable that he invokes data about the Evolution of Species to buttress his startling theme. The latter (over-simplified) can be condensed into tnese statements:

Progress comes from the distillation of "waste," and from oddball human behavior.

Dominance breeds conformity; and conformity is the kiss of death for any animal species or human civilization.

(Concluded on Page 18, Column 1)

18 Models In '60 Kelvinator Line Of Room Coolers

NEW YORK CITY—Kelvinator Div., American Motors Corp., announced that its 1960 line of "balanced comfort" room air conditioners includes 18 models in four series, with a choice of four different cabinet sizes and a cooling capacity range from 4,200 to 19,100 B.t.u.h., under standard conditions.

Three models are available with all-season reverse cycle heat.

Other 1960 products include three new "No Frost" refrigerator-freezers, including the "Foodarama," with completely automatic defrosting in fresh food compartments and freezers.

A new air circulation system maintains freezing temperatures in the freezer compartments without frost on shelves or food packages, according to Kelvinator. A similar system operates

(Concluded on Page 8, Col. 1)

BEHIND PAGE ONE...on Page 5

Anemostat Elects Roff Vice President

NEW YORK CITY—Election of Cartis T. Roff as vice president in charge of production and engineering of Anemostat Corp. of America was announced by August Rust-Oppenheim, president.

C. T. Roff

Roff makes his headquarters at the company's Hartford, Conn. plant. He is responsible for design engineering and production of the Anemostat line of air diffusers, high velocity air distribution systems, and Anemotherm air meters.

He joined Anemostat in January, 1946, as assistant to the president and became plant manager at Hartford in 1949.

Kensico, Robinson Considering Merger

NEW YORK CITY—Directors of Kensico Tube Corp., Mt. Kisco, N. Y., and Robinson Technical Products, Inc., Teterboro, N. J., have approved a merger plan.

Under terms of the proposal, Kenisco would become a division of Robinson and would continue under Kenisco's present management headed by President Thomas Nast.

A special meeting of Robinson stockholders will be called to vote on the proposal, which contemplates the exchange of about 170,000 shares of Robinson common for about 34,000 shares of Kensico common. There are now 382,222 shares of Robinson common outstanding.

Kensico makes copper tubing for air conditioning, refrigeration, and other applications. For the fiscal year ended Oct. 31, sales totaled about $7,200,000 and net income about $270,000, compared with $5,258,000 and $165,000 in the previous fiscal year.

Robinson makes metal shock-absorbing equipment used in missiles, planes, and space vehicles. Last August, it acquired High Vacuum Equipment Co., metallurgical specialist. For the fiscal year ended June 30, Robinson reported sales of $3,545,000 and net income of $348,202.

Ellsworth L. Mills Dies

CHICAGO — Ellsworth L. Mills, 72, vice president of Bastian-Blessing Co., died Dec. 6 in the Exmoor Country Club.

Mills was also vice president and director of Gas Equipment Co. and was a former consulting engineer to the New York City Subway Commission. Surviving are the widow, Mary; five children; and a brother.

Worthington, Unions Extend Contracts

NEW YORK CITY — Extension of their current contracts through Jan. 3 and thereafter until the expiration of a five-day cancellation notice by either side was agreed to by Worthington Corp. and the locals of the United Steelworkers of America and the International Association of Machinists.

A previous 60-day extension expired Nov. 28. Under the new agreements, the new contracts will be retroactive to Aug. 15, except at the Decatur, Ala. plant, where they will be retroactive to Oct. 1.

The extension covers some 3,400 workers at plants at Decatur; East Orange, Harrison, Newark, and Plainfield, N. J.; Buffalo and Wellsville, N. Y.; and Oil City, Pa., according to the announcement.

Wilkinson Heads American-Standard Air Conditioning Div.

NEW YORK CITY—Clyde H. Wilkinson has been appointed president of the Air Conditioning Div. of American-Standard, it was announced by Joseph A. Grazier, president of the corporation.

Wilkinson

Wilkinson first joined American-Standard in July, 1955, as manager of water heater products for the Plumbing & Heating Div. For the past year, he has served as acting president of the Air Conditioning Div. He is active in industry association work.

The Air Conditioning Div. makes forced air heating and cooling systems for residential and commercial applications. Division headquarters are located in New York City; production and distribution facilities are centered in Elria, Ohio.

Emerson Radio Cooling Orders for '60 Exceed All of '59

JERSEY CITY, N. J.—Benjamin Abrams, president of Emerson Radio & Phonograph Corp. here, said recently that the company already had booked more orders for air conditioners than it sold in all of the last fiscal year.

He added that "we expect this equipment to contribute materially to profits in 1960."

The company started production of 1960 air conditioners in October. It didn't start making 1959 models until last January.

Abrams predicted that there won't be any material increase in prices of the company's products next year. "A steel price increase couldn't affect TV and radio very much, and by the time it could affect air conditioners, our production season will be nearly over."

He estimated that Emerson Radio's earnings in the year ended Oct. 31 were up about 75% from the $1,410,009 in fiscal 1958. This increase reflects in part a 15% increase in sales from $58,401,179 in fiscal 1958, and also, profit margins have improved due to technical improvements and economies in production, according to Abrams.

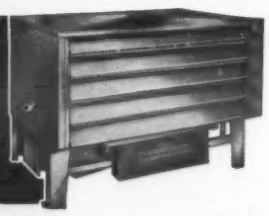
Buensod-Stacey Licenses Firm In British Isles

NEW YORK CITY—Buensod-Stacey, Inc., a pioneer in the development of high velocity air conditioning equipment, has announced the appointment of Andrew Air Conditioning, Ltd., to manufacture "'Dual Duct" air mixing units in the British Isles.

Andrew maintains offices in London, Stockport, and Belfast.

"This manufacturing arrangement, plus a similar one recently completed in Italy, marks important international growth for Buensod," the announcement said.

THROW YOUR COMPRESSOR *OUT!



*OUTSIDE, THAT IS!

KRAMER'S outdoor compressor is the only compressor designed to operate outdoors for any application under all temperatures and weather conditions.

Completely assembled, wired, tested and factory run-in, it arrives on the job ready to operate. Simple hookup eliminates costly installation and control adjustment time. Kramer's outdoor compressor ends waste of valuable indoor space.

- WRITE FOR BULLETIN

KRAMER

OUTDOOR COMPRESSOR

KRAMER TRENTON CO. • Trenton 5, N. J.

46 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

PHCIB Promises Contractors Same 'Meat and Potatoes' In Other Areas as Train the Trainer Course Ends In Dubuque

By George M. Hanning

CHICAGO—First cadre of 15 men who are to carry the Plumbing - Heating - Cooling Information Bureau's new "Selling Fundamentals" course to plumbing, heating, and cooling contractors throughout the country has just completed a week's intensive training in how to do the job most effectively.

The men, all of whom have had long previous experience in sales training, holed up for a solid week in the Del Prado hotel here to absorb the course's content and techniques of teaching it.

FIRST OF A SERIES

The "Train the Trainer" course is the first of a series planned for the coming year that will enable the bureau to take to contractors the Selling Fundamentals course that proved so successful in its trial run in Dubuque, Iowa, it was noted.

William A. Fitzpatrick, new president of the PHCIB, said: "Because the Dubuque pilot course was so carefully tailored to the contractors' needs through research and the expert planning of the all-industry Sales Training Council, we want to assure those contractors in other areas that they'll get the same 'meat and potatoes' the contractors in Dubuque got.

"That's why we're carefully preparing instructors for the Train the Trainer course to present their own courses in the same way as it was done in Dubuque."

The Sales Training Council with the guidance of a professional training organization, has reviewed the Selling Fundamentals course since the pilot run in Dubuque. In its final form, it incorporates those suggestions and revisions that the actual test in Dubuque showed would make it most effective for contractors everywhere.

The course was prepared by the H. D. Rose Co. of New York City, a sales managers' agency devoted to helping sales managers in all industries to solve specific marketing problems.

TEACHING TECHNIQUES

W. F. Koch and Robert Helmling of the company prepared the three-volume text for the course and taught the first trainer class the techniques of presentation.

Briefly stated, these techniques are the lecture, guided discussion, and practice in simulated sales situations. Lecture technique makes full use of drawing pad and blackboard, while "practice" makes students participate actively in problems and use their wits to find solutions.

The Selling Fundamentals course itself is divided into 10 three-hour sessions tailored to the heating, cooling, and plumbing industry. Subject matter of each is as follows:

1. Talk benefits, not features.
2. Building on to your business by upgrading and adding on.
3. Building on to your business through leads—using journeymen to spot and report leads.
4. Building on to your business through readily available lead sources such as customer accounts, journeymen, advertising, customer referrals, building contractors, and others.
5. Building on to your business through better contractor identification.
6. Getting leads through contractor identification — direct mail.
7. Direct mail and newspaper advertising.
8. Selling in the home.
9. Overcoming customer objections and closing the sale.
10. Time payment selling.

Additional Train the Trainer classes have been scheduled for January and February. Later classes will be formed as industry demand dictates.

Fitzpatrick commented that "by the end of the year (1960) we hope to have schools underway in a number of cities."

Attending the first Train the Trainer course were:

Steven B. Vogt, sales promotion representative, Wilkins Pipe & Supply Co., Peoria, Ill.; R. Louis Towne, executive director, Plumbing & Heating Wholesalers of New England, Wellesley Hills, Mass.; L. B. Moon, Clowe & Cowan, Inc., Amarillo, Texas; James F. Pease, Dayton (Ohio) All-Industry Group, New Breman, Ohio; D. F. Dickinson, manager of training, Noland Co., Inc., Newport News, Va.; R. B. Woodward, executive secretary, Virginia Associated Plumbing & Heating Contractors, Richmond, Va.; J. C. Seabrooke, Carrollton Mfg. Co., Carrollton, Ohio; Warren Hoy, field sales supervisor, Central Supply Co., Indianapolis.

Also, C. L. Tucker, Arkansas All-Industry Group, Little Rock, Ark.; E. Kenneth Euler, Wholesale Plumbing Institute of Southern California, Hollywood, Calif.; Joel Davis, sales-contact, Lee L. Dopkin, Inc., Baltimore, Md.; Lloyd Akerblom, assistant secretary, Southern Wholesalers Association, Atlanta, Ga.; Wayne Karber, Lansing Supply Co., Lansing, Mich.; Paul Werner, director of public relations, Plumbing Contractors Association of Chicago; James Voyce, Grand Rapids All-Industry Group, Grand Rapids, Mich.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

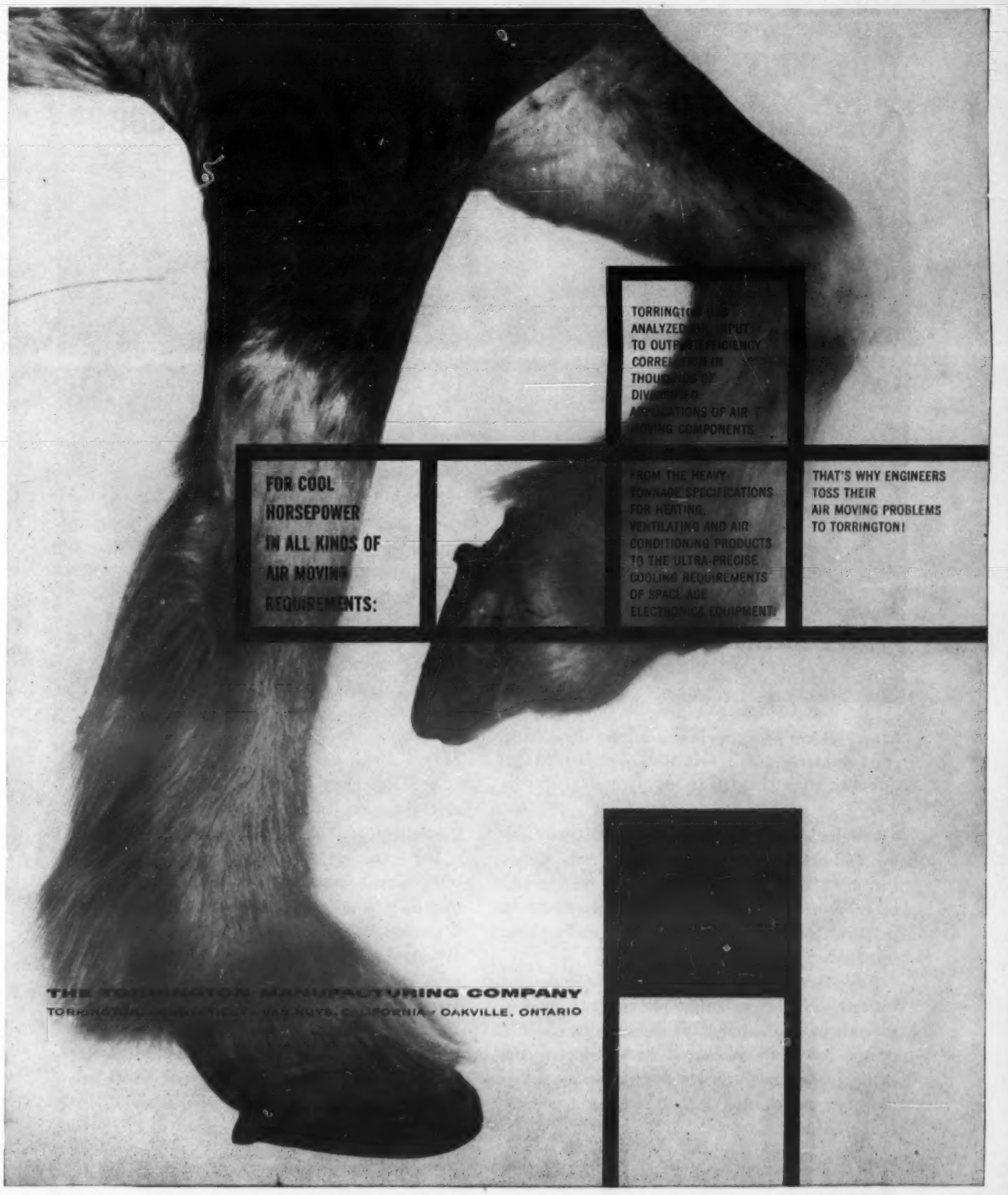
Sid Shapiro Named Vice President at Tenney Engineering

UNION, N. J.—Sid Shapiro has been promoted to vice president of Tenney Engineering, Inc., as head of the company's expanded heat transfer components division, Monroe Seligman, president, announced.

Sid Shapiro

Shapiro joined Tenney, a major producer of environmental test chambers as well as of coils for heating, air conditioning, and refrigeration equipment, in 1945. After working on all phases of coil production and assembly, he became a salesman and then sales manager.

With Shapiro in charge, the heat transfer components division, which sells to wholesalers and original equipment manufacturers, expanded into a plant in Baltimore. Now a second plant is under construction for the division in Wilmington, N. C.



Carrier Bows Air Purifier--

(Concluded from Page 1, Col. 2)

Carrier and general manager of its Unitary Equipment Div.

"Its effect is the same as 'airing out' the home completely with clean fresh air every 30 to 40 minutes."

"It is not only effective in removing new odors; it also will gradually eliminate the staleness caused by residual odors from tobacco smoke and other sources absorbed by walls and furnishings over the years."

As a wintertime humidifier, Gray said, the device will control the indoor moisture level automatically and precisely, regardless of outdoor weather changes.

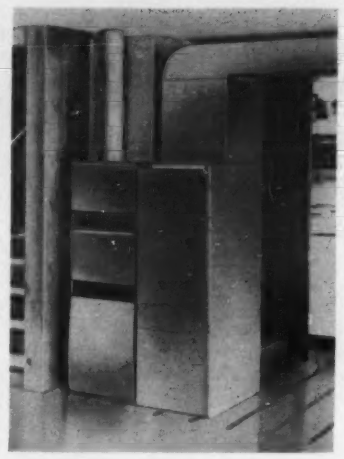
"A new operating principle eliminates scale and clogging caused by minerals in water," it was stated. "Even the most expensive humidifiers have usually required frequent maintenance to rid them of mineral deposits.

No Changing, Cleaning

The Air Purifier also provides continuous efficiency in air cleaning without the need of changing or cleaning the filtering element, according to Gray.

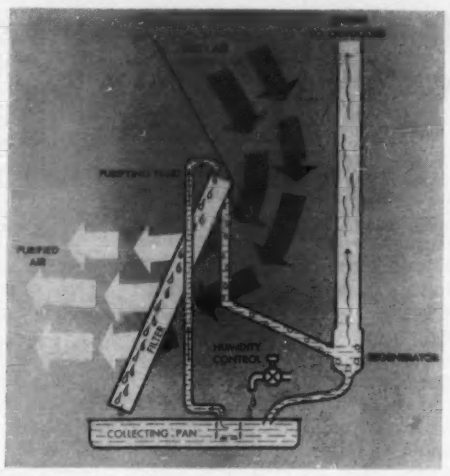
Most filters, unless they are replaced or cleaned regularly, lose efficiency or interfere with the operation of the heating and cooling system as they load up with dirt," Gray declared. "The Automatic Air Purifier cleans itself every few seconds."

The device uses a filtering element consisting of many layers of aluminum mesh screen, which is bathed every 20 seconds by a wave of liquid passing from top to bottom. The liquid is composed of water and a fluid called Carrex, developed by Carrier for its odor absorption qualities.



CARRIER'S NEW AUTOMATIC air purifier is right half of this central air conditioning system for a home. Unit at left is furnace and cooling coil combination.

In laboratory testing, Carrier used a wide range of odor vapors representing sweet, sour, rotted, and burnt classifications, it was pointed out. A concentrate of tobacco smoke odor, described by the company as the most troublesome of smells, also was employed to prove the effectiveness of the Air Purifier.



LARGE ARROWS show direction of airflow through filter element which is continually bathed with purifying fluid pumped from collector pan at bottom. Part of fluid (water plus odor absorbing Carrex) is drained into regenerator where odors are removed and minerals precipitated. Humidistat adds correct proportion of water to Carrex solution to control humidity. Air enters from return air duct, discharges into heating and cooling unit.

The Carrex fluid, according to William McGrath, chief engineer of Carrier's Unitary Equipment Div., contains a mixture of glycerine-like substances which picks up odors much as an uncovered piece of butter in a refrigerator will take on the smell of adjacent foods. It is non-flammable, non-toxic, non-irritating, and has no odor of its own, McGrath said.

Air Bubbles Carry Away Odors

"After absorbing odors passing through the filtering element, the fluid is heated and air is bubbled into it to carry away the odor vapors through an outside vent," it was explained. "Heating of the mixture also precipitates the water-borne minerals, preventing them from being deposited on the humidifying surface.

"Humidity control is effected by regulating the proportion of water in the liquid mixture passing over the filter element. A humidistat is set for the desired humidity level. It operates electrically, opening and closing a water valve to maintain the necessary rate of evaporation.

"The successive waves of fluid over the filter element provide a flushing action which effectively removes all dirt collected and deposits it in a pan at the bottom of the device.

"The Automatic Air Purifier when installed as part of a new central air conditioning system will cost about $250 in a home of average size."

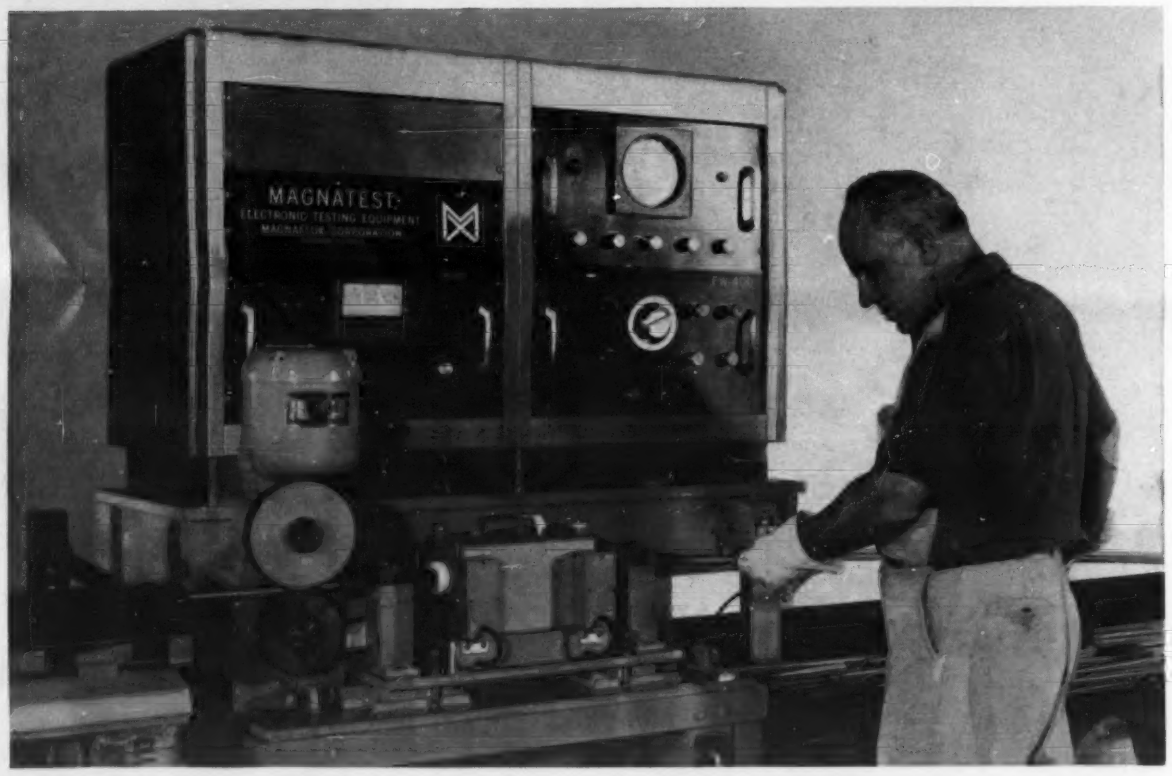
Detailed Description

In presenting a detailed description of the air purifier, McGrath described the slanting filter element as being constructed of sheets of louvered aluminum mesh interlocked to an over-all thickness of about 2 in. The Carrex fluid flows down the filter from top to bottom, then drips into a pan, where a pump sends the liquid through a tube to a tilt tray extending across the top of the filter.

When the tray is filled (in about 20 seconds) gravity causes it to tip and dump the fluid on the filter media, which is said to result in a flushing action with waves of fluid surging at intervals down the filtering element, and this serves to clean the filter, McGrath stated.

Since the solution acts as an odor control device by "collecting" odors, some means must be had of removing them. To do this a small portion of the fluid is diverted to this regenerator. In it is a small automatically controlled heating element to raise the temperature of the

Why eddy-current testing gives you consistent soundness in Anaconda thin-wall tube



Many years of experience with eddy-current testing have enabled Anaconda to develop meaningful inspection standards

Through its long association with the air conditioning and refrigeration industry, Anaconda knows the importance of top quality in thin-wall copper tube. From billet to finished tube, quality-conscious practices control production. Critical and realistic standards govern inspections.

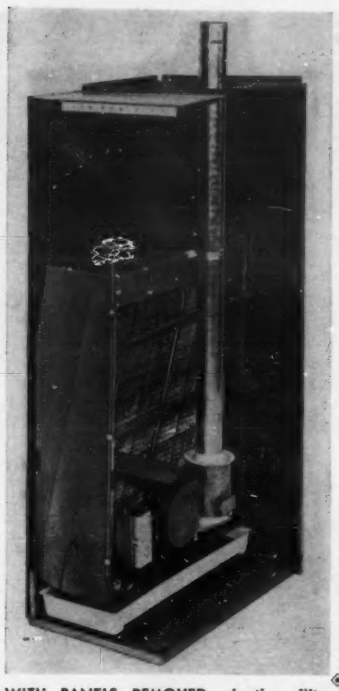
Eddy-current testing is one of the important reasons why Anaconda thin-wall copper tube consistently meets the industry's rigid quality requirements. Anaconda pioneered in developing the application of this valuable tool to the inspection of copper tube, during 10 years of research on electronic testing.

This extensive development work—involving the hydrostatic expansion of literally thousands of tubes—has enabled Anaconda to establish practical eddy-current inspection levels for meaningful inspection standards.

Tubes that do not meet these standards in the eddy-current test are *automatically* segregated—so that there is no chance for human error.

Quality tube and creative technical services. Whether you need hard or soft thin-wall copper tube, capillary or restrictor tube, or bulb and tube assemblies, Anaconda has the experience and facilities to produce the quality tube you require for economical manufacture. For further information or technical assistance, write: French Small Tube Division, The American Brass Company, Box 1031, Waterbury, Connecticut.

ANACONDA® **COPPER TUBE** *for Refrigeration and Air Conditioning*
Made by The American Brass Company



WITH PANELS REMOVED, slanting filter element is exposed. At right is regenerator where solution is purged of odors which pass to outside via the ventpipe. Humidistat is at bottom left.

* * *

solution. A small fan bubbles air through the hot fluid. At the higher temperature, the odor vapors are released to the air which then carries them outdoors through a vent, and the fluid, thus purified, returns to the pan.

For humidification, a valve controlled by a humidistat increases or decreases the amount of water in the fluid, and the water evaporates into the air passing over the filter media. A characteristic of the Carrex fluid, said McGrath, is that it has a strong affinity for water. But as water is added, a balance is reached and any additional water beyond this balance point will begin to vaporize.

Affects Humidity In Cooling Season

It is also claimed that the fluid has an effect on humidity control in the cooling season. It is said that as the cooling coil dehydrates air, it is also dehydrating the Carrex solution. When the cooling coil is not functioning the solution begins to re-absorb the moisture from the circulating air, thus checking the rise in humidity and serving as a "humidity flywheel," McGrath declared.

Carrex was described as a mutual solution of aliphatic organics and supporting additives especially compounded, which in more common terms is a special mixture of glycols.

Maintenance Is Simple

Maintenance is said to be relatively simple. Dirt collected by the fluid will collect in the bottom of the pan, which should probably be emptied twice a year.

In answer to a question, McGrath said that the Carrex solution might have to be renewed after use over an extended period of years. Power consumption is said to be approximately equal to that of a 100 watt light bulb.

Two models of the air purifier are scheduled to be available for sale in April. One is rated at 1,200 c.f.m. designed for cooling systems up to 36,000 B.t.u. and heating systems up to 120,000 B.t.u. The other is for cooling systems up to 60,000 B.t.u. and heating systems up to 185,000 B.t.u.

A model for use in larger systems with a capacity of 4,000 c.f.m. will be available next summer, and these larger models will be designed for stacking in multiples.

Smaller of the two residential units measures 57¼ in. high, by 20 in. wide, by 27 in. deep. The larger one is 28 in. wide but other dimensions are the same.

Buensod-StaceyCatalogs 'Dual-Duct' Mixing Units

NEW YORK CITY — Photographs, details, and dimensions of "Dual-Duct" air mixing units with patented automatic volume control features are included in a new two-color catalog issued by Buensod-Stacey, Inc., 45 W. 18th St., New York 11, N. Y.

Byers Winner Misses Pipe Life by 35 Days

PITTSBURGH—Winners have been announced for the wrought iron durability contest sponsored by A. M. Byers Co., Pittsburgh, at the recent 11th Exposition of the Air Conditioning & Refrigeration Industry held in Atlantic City.

First prize of $100 was awarded Stanley Dreskin, engineer for Syska & Hennessy, New York City. Dreskin's estimate was 24 years, 6 months, and 3 days.

Actual service life of the wrought iron pipe section displayed at the Byers exhibit was 24 years, 7 months, and 8 days.

The $25 second prize was awarded Max Maser of Philadelphia.

The 1¼-in. diameter section of brine pipe used in the Byers contest was taken from the Chicago Stadium ice rink floor. The wrought iron piping, used to freeze the stadium's ice rink floor, was taken out and replaced last summer—not because of piping failure, but concrete and structural failures, it was noted.

The stadium ice rink was repiped with Byers 1¼-in. diameter wrought iron pipe.

BEHIND PAGE ONE . . .

COMMERCIAL Air Conditioning

One Master System To Air Condition Seven Broadway Theaters 10

Air Conditioned Missile Simulator Keeps Nike Crews In Good Training 24

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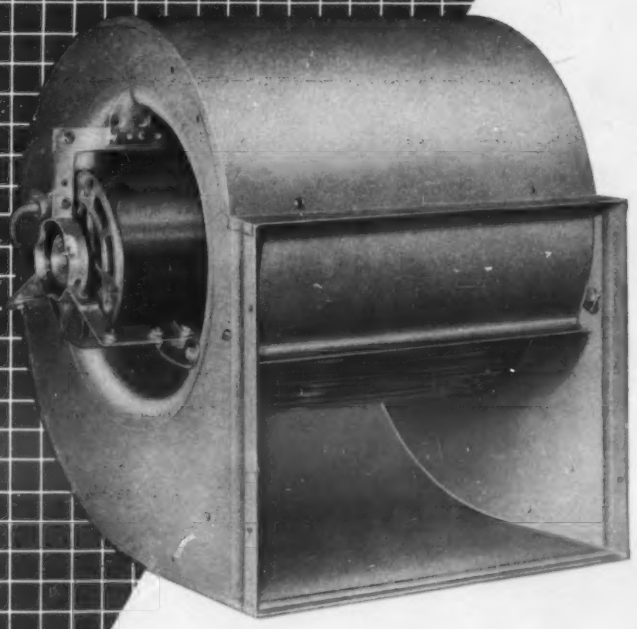
DIRECT DRIVE!

Another LAU "first in the Industry"



The Lau direct drive blower is designed for efficient operation in the smaller, more compact heating and air conditioning systems. This unit is especially practical where space is at a premium and lower component cost is desired.

Direct drive feature eliminates externally moving parts and results in a smaller, more compact unit having less vibration.

Lau direct drive blower assemblies are shipped ready for installation. Standard features include Lau-approved motor, thermo-overload protection, 30" motor leads, adjustable mounting brackets, oil tube extension and pre-punched housing for rapid installation. Available in a wide variety of C.F.M. ranges from 50 to 2490.

The Lau Blower Company, 2027 Home Avenue, Dayton 7, Ohio.

Other plants in Kitchener, Ont., Can., and Irwindale, Calif.

LAU — World's Largest manufacturers of Air-Conditioning Blowers for

Shhhhhhhh!

You'll have to be quiet to hear the new WESTINGHOUSE AIR-LINE MOTOR!

You can hear a pin drop alongside a new, extra-quiet-running Westinghouse Air-Line motor. This new 48-frame shaded-pole or permanent split capacitor motor is the quietest and most failproof motor you've ever used.

So very quiet because a Westinghouse design exclusive, a cushion of oil between nylon washers, *never gives sound a chance.*

So failproof because Westinghouse has eliminated the major source of air conditioner failures by welding and wrapping all electrical connections with multiple windings of insulating tape.

So moisture resistant because Westinghouse builds the entire motor for moisture resistance—with Mylar* insulation, a corrosion-resistant shaft, and double-dipped motor windings.

So much shorter—the shortest motor ever—with perfectly flat end-bells and recessed bolts.

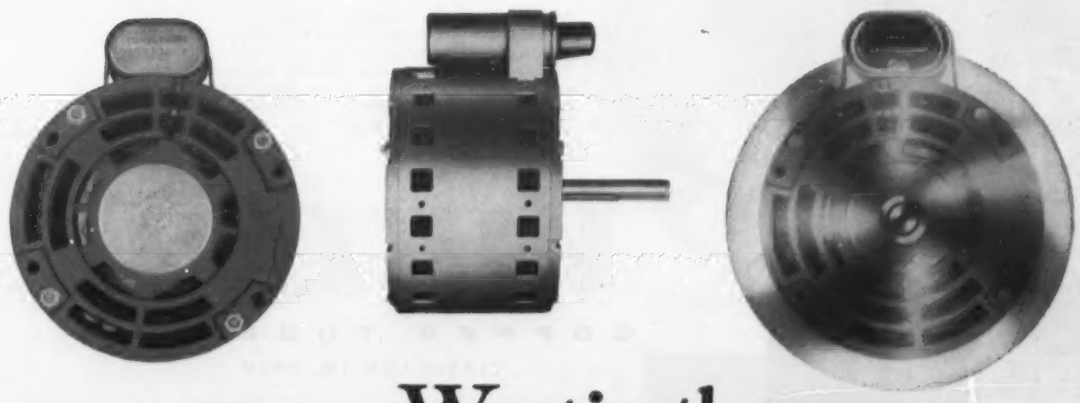
No oiling for five years or more with Permawick lubricating system.

With plug-in terminals or leads depending on your requirements.

Plus dozens of other features that your local Westinghouse sales representative will be proud to show you. Ask him for a demonstration today. Or write to: Westinghouse Electric Corporation, Mr. C. B. Jakes, Industrial Motor Department, Lima, Ohio.

*DuPont registered trade-mark

J-03054-A



YOU CAN BE SURE...IF IT'S **Westinghouse**

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV FRIDAYS

Kelvinator Room Air Conditioners--

(Concluded from Page 1, Col. 5)

in the fresh food compartment.

In announcing also, at a press preview here, that major appliance sales in 1959 for Kelvinator gained 35% over 1958, Homer L. Travis, vice president in charge of sales, said room air conditioners jumped 28%. He noted that the company had several record months in room units during 1959.

Leading the increases in dealer billings over last year were refrigerators (up 41%) and home laundry equipment (up 43%).

Distributor prices of the 1960 lines generally remained at the same level as 1959 models, although there were individual variations within each new line of products.

"All Kelvinator room air conditioners for 1960 have all-metal fronts for structural strength and ease of cleaning, cleanable filters with germicidal action, automatic thermostats, and simplified controls," it was stated.

"All but the light-weight portable include two-directional air flow control, which permits balanced air circulation in all parts of the room, or circulation of cool, filtered air into two rooms at the same time.

'Masterpiece' Series

"Largest capacity and widest range of features are incorporated in the ten-model 'Masterpiece' series, which combines a more efficient, electrostatically-charged filter with the exclusive 'filtermatic' signal, a visual signal on the front of the cabinet that indicates when the filter is clogged and in need of cleaning to restore peak performance."

Kelvinator claims that its electro-magnetic "germicidal" dirt filter removes nearly half as much more harmful dirt, dust, and pollen from the air than a conventional filter." The washable filter material is impregnated with a special agent to kill air-borne germs caught by the filter, the company caid.

All "Masterpiece" models in addition have two fan speeds and a pull-out chasis, for ready maintenance and cleaning. They come in two cabinet sizes, 15¾ in. high by 26⅜ in. wide by 20 in. deep, and 17¾ by 26⅜ by 29⅝ in.

Other model-by-model variables are horsepower (1, 1½, 2, and 2½), cooling capacity (10,000, 10,200, 13,200, 16,700, and 19,100 B.t.u.), air circulation volume, moisture removal, and required voltage (115-volt, 60 cycle; 208-volt, 60 cycle; and 230-volt, 60 cycle). Two models in the series are available with all-season reverse-cycle heat.

AIR-BORNE GERMS are said to be killed as they are caught in filter of Kelvinator room air conditioners for 1960. Electro-magnetic dirt filter removes 95 per cent of dirt, dust, and pollen from the air for cleaner, healthier living. Exclusive "Filtermatic" signal, a visual signal on the front of the cabinet, indicates when the filter is clogged and in need of cleaning to restore peak performance to the room air conditioner.

All three models in the "Custom" series operate on 230-volt, 60 cycle current. Selections are a 2-hp., 14,200-B.t.u. capacity unit in a cabinet 17¾ by 26⅜ by 29⅝ in., or a 1-hp., 10,200-B.t.u. unit in a cabinet 15¾ by 26⅜ by 20 in. The smaller unit is also available with all-season reverse-cycle heat.

'Space-Saver' Models

Four "Space-Saver" models "offer the extra advantage of minimum overhang outside the building or inside the room, so that drapes can be drawn when the unit is not in use," is was stated. All are 1-hp. models in a cabinet 14 by 23 by 16¾ in. Cooling capacities range from 6,700 to 8,600 B.t.u. One model operates on 230-volt, 60-cycle current and the others on 115-volt, 60 cycle.

Kelvinator's compact "portable" is 12 in. high, 16 in. wide, and 16 in. deep, weighs 65 lbs.

The "portable" operates on 115-volt, 60-cycle current, and has a capacity of 4,200 B.t.u.h.

Refrigerator-Freezers

The No Frost refrigerator-freezers are the Foodarama, an 18-cu. ft. model with 6-cu. ft. vertical freezer on the left; a 14-cu. ft. model (K80M) with 108-lb. freezer at the bottom; and a 14.4-cu. ft. model (K78M) with 130-lb. freezer at the top.

The fresh food compartment of the No Frost Foodarama, it was explained, "is refrigerated through a small, compact cold plate concealed behind a decorative aluminum cover plate at the top of the back wall.

"Air is drawn in at the top of cover plate behind the 'Cold Mist Crisper' and is cooled as it is blown across the cold plate. The air is then discharged at the bottom of plate.

"A small fan at the top of the compartment constantly circulates the cool air throughout the compartment. When door is opened, fan stops to prevent discharging cold air into room.

"A separate air circulation system and concealed cooling coil maintains zero degree temperature in the freezer compartment and prevents the formation of frost on food packages, on the shelves, and on the freezer walls.

"The Kelvinator refrigeration system does not use any heating devices to dissipate frost, but regulates the flow of gas to prevent the accumulation of frost in both freezer and fresh food compartment.

Operation of the No Frost systems in the other models is similar to the Foodarama.

The Foodarama and model K78M have as a factory built-in accessory an automatic ice dispenser which makes ice "crescents" without trays and stores them in a special container.

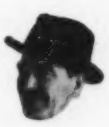
WHAT'S A THOUSANDTH OF AN INCH BETWEEN FRIENDS!
When our friends are also our customers (and vice versa), that thousandth of an inch can be very important!
Leading makers of air conditioning and refrigeration equipment select Viking copper tube because of its strict standards of quality: absolutely true as to roundness, uniform as to wall thickness, exact as to diameter.
The reason lies in the fact that the mandrels and dies used to draw Viking copper tube are held within extremely limited tolerances. Special machinery built by Viking keeps a constant check on these limits.
Attention to the smallest detail of fabrication produces thin-wall copper tube that is consistently superior in quality. Viking customers keep coming back — precisely because they know that to us even a fraction of a thousandth of an inch does make a difference.
VIKING
COPPER TUBE CO.
CLEVELAND 10, OHIO

Climate by Chrysler

makes my client cooler, and my wallet fatter!

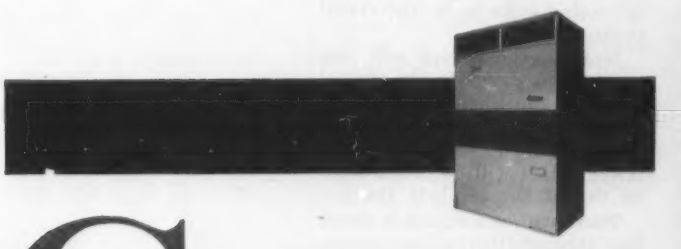
"Why am I happier selling Chrysler Packaged Air Conditioning? Because I sell more—and make more on what I sell. I'm handling the most complete line in the industry. Since I can always get the exact unit for any job, my quotations are consistently lower. And Chrysler engineering know-how saves me time and money on installation . . . cuts service call-backs to the bone."

"My boss was a push-over for Chrysler Air Conditioning. It's got everything he wanted . . . and then some. Like all-weather operation. With this Chrysler exclusive, whether it's 120° above, or 5° below—we've got Spring."



"I specified Airtemp for my building for many good reasons. Dependability—assured by Chrysler's 25 years leadership in packaged air conditioners. Economy—from their new Power Miser Compressor. Safety—Chrysler includes, as standard, features most manufacturers don't offer, even as extras."

The Chrysler Story has a happy ending for everyone: contractor, owner, and user. Why not have your local Airtemp distributor tell it to you? Or write: Airtemp Div., Chrysler Corp., Dept. H-129, Dayton 1, Ohio. Canadian Distributor: Therm-O-Rite Products, Ltd., Toronto, Ont.

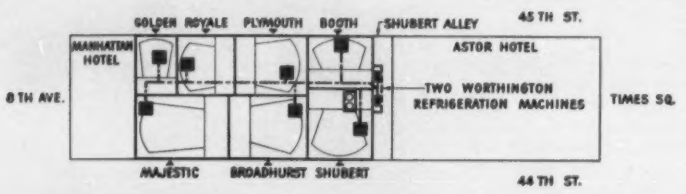


CHRYSLER
AIRTEMP

FIRST WITH THE FINEST IN AIR CONDITIONING

Ice Chilling Systems Replaced

7 Broadway Theaters To Be Mechanically Air Conditioned by Master System



SEVEN SHUBERT THEATERS on 44th and 45th Sts. in New York's legitimate theater district will be air conditioned by a central Worthington refrigeration system in the "largest theatrical air conditioning installation ever devised." The single system to cool the seven theaters will be installed under historic Shubert Alley. The theaters are the Shubert, Broadhurst, Majestic, Booth, Plymouth, Royale, and Golden. Relative location of equipment and theaters is shown in diagram.

NEW YORK CITY — Seven historic theaters, representing nearly one quarter of New York's entire Broadway legitimate theater district, will be mechanically air conditioned for the first time by next summer, it was jointly announced by theater owner J. J. Shubert and Worthington Corp., maker of the air conditioning equipment.

An ingeniously designed hookup will link all seven theaters to a master air conditioning system, which will be located out of sight under famed Shubert Alley, it was stated.

'Largest Single Theater Air Conditioning Job'

The theaters, whose 7,999 seats are said to make this installation the largest single theatrical air conditioning installation ever devised, will continue in operation while the installation is going on, with the new system due to be turned on by next spring, it was announced at a press luncheon held at Sardi's restaurant in the Gotham theater district.

The Shubert theaters included in the project are: Shubert, 225 W. 44th; Broadhurst, 235 W. 44th; Majestic, 245 W. 44th; Booth, 222 W. 45th; Plymouth, 236 W. 45th; Royale, 242 W. 45th; and Golden, 252 W. 45th.

The new system replaces ice-chilling systems where up to $6,000 worth of ice a week, in 350-lb. chunks, has been required to cool the seven theaters during hot weather.

Operating Cost Will Be One Tenth of Present Ice Chilling System

The new system will cost one tenth as much to operate, according to Worthington engineers, and will not only cool but will regulate humidity and provide the other advantages of air conditioning.

The Worthington engineers will solve the intricate mass air conditioning challenge by installing a 650-ton central refrigeration plant in an abandoned boiler room beneath Shubert Alley. Chilled water will be piped from the central system to cooling units in the individual theaters.

Worthington pumps will also be used to circulate the chilled water to the cooling systems in the theaters and to pump condenser water to the evaporation tower which will be constructed on top of the Shubert theater.

There will be a constant water flow through the cooling system and the compressors will be able to operate at varying speeds in order to meet load requirements. Outside temperature changes and varying numbers of persons inside will result in automatic adjustments to maintain constant comfort for theater-goers, it was noted.

Shubert said the job would cost in excess of $250,000 and praised the work of Worthington sales engineers in searching out the most practical solutions to the various problems encountered. Original estimates indicated the job would be considerably more costly, he said.

Pointing out important changes in the nature of the legitimate theater business, Shubert said such a major project would have been a gamble a few years ago, but was a necessity today.

He said two factors have changed the theater into a year-round business and made provisions for the summer comfort of patrons a must.

Shubert cited first the growth of mail order advance sales and second the growth of theater parties as the reasons. Legitimate houses in the past had a 25 to 30-week season, opening in September or October and running through until the beginning of hot weather the following year, he said.

"In the past virtually all theaters closed for the summer. As recently as 1950, summer operation accounted for less than 5% of our profits. Last year the figure was 40%.

"People didn't write in for tickets in the old days, but they do now. Mary Martin (appearing in 'The Sound of Music') had a two million dollar advance sale. That will carry her into next summer," Shubert said.

Commenting on the growth of theater parties, Shubert said that six years ago his theaters booked about $100,000 in theater party business, while last year's figure was $5,200,000.

Theater parties are club or business groups purchasing blocks of tickets for a show. Charity benefits are also growing in importance. Blocks of tickets are bought and resold with a contribution to the charity added to the box-office price. Grocery chains, department stores, and banks also are using an increasing number of tickets in various promotional activities, Shubert said.

In addition to the reduced operating costs of the new air conditioning system, Shubert

listed two other major advantages in increased audience comfort and the elimination of an ice delivery problem.

A New York ice company has supplied the Shubert theaters for years, putting on a special crew in the summer to handle the job. This crew was hard to come by, however, due to undesirable hours and the necessity to work a split shift on matinee days, it was pointed out. Generally, men from the ice company were pressed into service.

As for audience comfort, Shubert said that much more was involved than providing the advantages of air conditioning as opposed to the humid cold air provided by the ice.

Under the ice system, a bunker in the basement is filled daily with the 350-lb. ice blocks. Water is sprayed over it for cooling, then pumped to the air intake, usually a converted window near the roof. There it goes through coils where fans pull air across it and into the distribution ducts.

Old System Had To Be Shut Off Before Performance Ended

The ice in the bunkers melted rapidly as the cooling water was sprayed over it. In order to conserve the ice, the cooling system was not turned on until most of the audience were already in their seats. Even so, the ice would not last until the end of performances on hot summer nights. Often the ice was gone and the system had to be turned off a half hour before the show ended.

"That last half hour could be pretty miserable," Shubert said. "As soon as the fans were turned off, the temperature started to climb."

Another strong proponent of audience comfort is Samuel Schwartz, managing director of Jujamcyn Corp. which owns and operates three former Shubert theaters, including the St. James which is across 44th St. from the Shubert theaters in the current Worthington project.

The St. James, where "Flower Drum Song" is in its second successful season, was air conditioned by Worthington last year, along with the other two Jujamcyn theaters, the Colonial in Boston and the Shubert in Philadelphia.

Schwartz Believes Comfort Of Audience Is Second Only To Good Show

Schwartz believes audience comfort is second in importance only to having a good show on the stage. His first step on taking over management of the three houses was a rejuvenating program that included installation of Worthington air conditioning systems in each.

He also believes that the steamy discomfort theater-goers have encountered in the past has been one of the important reasons behind the decline of the legitimate theater business.

Across the nation, roughly half the legitimate theaters have closed their doors in recent years. New York City, which had 60 theaters before World War II, now has 32. Philadelphia, which had a dozen, now has five.

With comfort provided, Schwartz looks for new theaters and a resurgence of the theater business.

It was not until 1940 that even ice cooling was introduced in Broadway theaters. And it was another 15 to 20 years before mechanical systems made their debut.

The Mark Hellinger theater in New York City, where "My Fair Lady" continues to draw packed houses after more than 1,500 performances, was one of the first in New York City with mechanical cooling. A Worthington system was installed there five years ago.

Airtemp Appoints Hilburn, Denton

DAYTON—Two key appointments in the expanded Packaged Heating and Cooling Dept. of Chrysler Airtemp were announced by Warren Fitch, marketing manager. William H. Denton has been named manager, sales planning, commercial products, and H. M. Hilburn has been appointed manager, sales planning, residential products.

H. M. Hilburn

W. H. Denton

With the exception of room air conditioners and large applied machinery installations, Packaged Heating and Cooling products include Chrysler residential and commercial air conditioning units, and heating equipment.

Denton has been with Chrysler since 1952, most recently as commercial product planner for Packaged Heating and Cooling. After serving with Westinghouse Electric Supply Co., O. A. Sutton Corp., and Whirlpool Corp., Hilburn became Chrysler Airtemp regional manager in Chicago in 1958.

Trane Names Scollard Branch Plants Manager

LA CROSSE, Wis.—William E. Scollard has been named manager, branch plants, for Trane Co., Thomas Hancock, executive vice president announced.

W. E. Scollard

Scollard will administer operations of Trane branch plants in Scranton, Pa., Clarksville, Tenn., and the new proposed plant in Salt Lake City.

He will also coordinate the activities of branch plants with La Crosse staff operations.

Scollard's appointment reflects Trane's emphasis on location of manufacturing plants to serve important major markets, it was pointed out. The proposed Salt Lake City plant, for instance, will allow substantial reduction in delivery time and transportation costs for the expanding West Coast market, the company said.

Since 1956, Scollard has been planning and engineering manager of Dearborn Assembly plant at Ford Motor Co.

Merchants To Hear About Air Conditioning

NEW YORK CITY—A talk on "Heating and Cooling the Store" will be presented by Bernard F. Greene, local consulting engineer, during the 49th annual convention of the National Retail Merchants Association.

The convention will be held Jan. 10-14 at the Statler Hilton hotel here. Greene will speak on Thursday morning, Jan. 14.

the décor of every home . . .

GENERAL ELECTRIC'S NEWEST STRAIGHT-LINE THERMOSTAT

Here's a brand-new straight-line thermostat from General Electric. Its clean good looks and modern appearance match its proved, engineered accuracy. And what does this mean to you and your customers?

It means solid comfort conditioning. This new, precision-engineered instrument provides accurate control for today's heating systems . . . at the touch of a fingertip. Just a touch on the smart adjusting dial sets the temperature that means desired heating comfort.

It means sure, positive control. Because of its positive, snap-action mechanism, the new G-E thermostat provides maximum resistance to household vibrations; and it needs no leveling. And, of course, it's easy to install. Its sub-base goes on the wall with only two screws; and only two wire connections are needed.

For more information:
OEM's: contact your nearby G-E Apparatus Sales Office for application engineering service.
Dealers: contact your local distributor of G-E heating controls.
Or write to Section 740-142, General Electric, Schenectady 5, N. Y.

APPLIANCE CONTROL DEPARTMENT

GENERAL ELECTRIC

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

times that we formally resigned our membership last April.

Nevertheless, the albums continued to come—along with bills, of course—every month. First two of these unwelcome arrivals were mailed back at our own expense.

Next two neither were opened nor returned. This columnist wrote a rigorous letter of protest to the President of the club. Apologetic letter from the latter ensued, along with some postage stamps.

Three days later, another bill arrived, and another record!

The records have stopped arriving, finally, but we still receive lawsuit-threatening letters demanding we pay for unwanted, unordered, and even *never-arrived* merchandise.

Either this is a racket bordering on a "con game," or it is an incredibly inefficient operation.

Thousands upon thousands of innocent, unknowing "members" may have been bilked by this practice of INTIMIDATION because they didn't know that legally you don't have to pay for anything you don't order.

Better Business Bureau, please note. Likewise, Congressional investigating committees.

What Some People Won't Do for a Cup of Coffee

Southwest Mfg. Co.
Aurora, Missouri

Editor:

As an ardent follower of "Inside Dope" I'm sure you and your other readers will get a kick out of the attached article as it appeared in a recent edition of a Springfield newspaper.

B. T. CHURCH,
General Sales Manager

"A fuss between a Springfield woman and a male acquaintance apparently broke up a party early today.

"The woman, a resident of West Lombard, told police she met the man at Darden's Bar and they decided to go to the home of her mother—who was away—and have a party.

"When they got to the home about 2 a.m., she reported, she wanted to make some coffee before having the party but the man wanted to have the party before making the coffee.

"The fuss followed, police reported, as the result of the difference of their ideas about which they would do first.

"The woman said the man choked her, left her lying on the bed, and ran out of the house with her purse containing $9."

P.S.: Moral to this story, we'd say, is that The Coffee Break Has Got to Go!

Gypped Worthingtonian

He wrote the book—but he never had seen it before.

This was the surprise that a morning mail brought Igor Karassik when a book he helped author arrived from Red China.

As had happened with hundreds of similar works, Red China had pirated his book—a technical text entitled "Pump Questions and Answers"—written by Mr. Karassik and five other Worthington engineers.

A friend, while traveling in the Far East, happened upon the stolen Red Chinese version, bought a copy, and brought it back to the author. Until he received this book, engineer Karassik had been unaware of its existence.

Karassik, who is consulting engineer and manager of planning for Worthington's Harrison (New Jersey) Div., wrote the Red Chinese publisher as follows:

"It was gratifying that you felt it worthwhile to reprint this book, but it was also rather annoying that you chose to do so without asking either my permission or that of the U. S. publisher."

The book itself was a reproduction of the original edition—each page photo-copied (in English, naturally). There were two small changes.

One was on the title page, where the original McGraw-Hill name had been replaced by a symbol of the Chinese publisher. The other was a list of new books from the same Red Chinese firm—all stolen from leading U. S. publishers.

The Russians, also notorious book pirates, follow a slightly different system. Rather than obliterating the original publisher's name, they leave it in to put the stamp of authenticity on each text they theft.

Ignoring both copyrights and the author's wishes, both Red China and Russia for years have been appropriating technical works written by men in the free world—without compensation to the latter.

Recently, however, the Russians have had a chance to see the other side of the coin. Red China has proved to be a pirate's pirate.

These brigands are expropriating and reprinting Russian technical textbooks!

Out of Our Mailbag

Kelvinator Sales Corp.
Vancouver, B. C., Canada

Editor:

It actually happened to Ed Short, our Service Manager, and it's good enough for your column.

Lady complained of a leak in baffle tray of her frig and one or two other items. Serviceman went out and fixed.

A little later she phoned Ed. Her words. . . .

"I know it sounds terrible but I've still got a hole in my baffle. . . ."

JACK A. WILLIS,
Manager

B.F.Goodrich

If it sweats, rattles, shakes or leaks . . .

. . . it shouldn't! And if you ask B.F.Goodrich, it won't! B.F.Goodrich, as the largest producer of sponge rubber and cellular plastic, makes special or standard parts for the refrigeration and air conditioning industry. Typical functions of these parts are sealing, gasketing, insulating and vibration damping — under the most trying conditions. So get the advantage of the experience that has put B.F.Goodrich cellular materials into The Sheraton Hotel, Philadelphia; The Conrad Hilton, Chicago; The Corning Glass Building, New York and many other New York office buildings. Write The B.F.Goodrich Company, 580 Derby Place, Shelton, Connecticut.

B.F.Goodrich *industrial cellular materials*

DOES YOUR APPLIANCE CARRY THIS SEAL of QUALITY?

The motor used in this equipment is protected against overloads, low voltage, over-voltage with a Mighty Mite Thermal Protector

MECHANICAL INDUSTRIES PRODUCTION CO.
223 Ash Street • Akron, Ohio

the quality
tells . . .
the quality
sells . . .

JANITROL

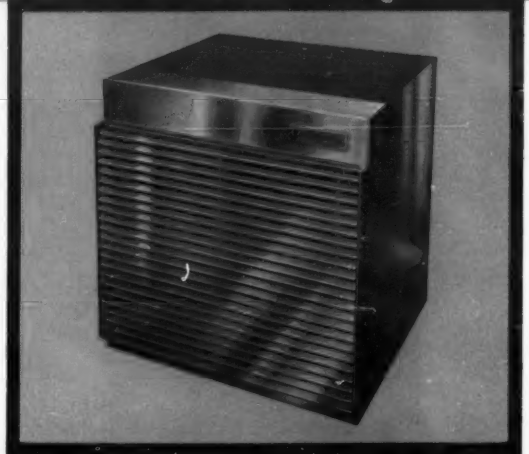
AIR-COOLED
AIR-CONDITIONING

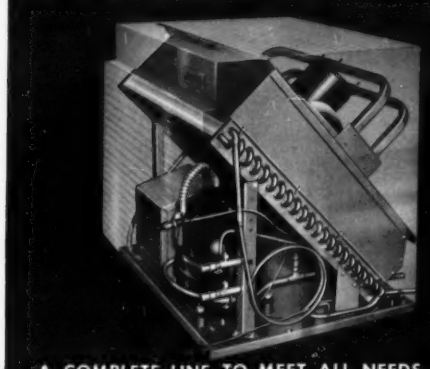
Hallmark of Quality
in Luxury Comfort

UNCHALLENGED COOLING PERFORMANCE...

in all-new JANITROL

52 SERIES CONDENSING UNITS





A COMPLETE LINE TO MEET ALL NEEDS . . .
CAPACITIES FROM 22,200 TO 110,200 BTU/HR.

Outwardly beautiful and pleasing to the eye, inwardly rugged and powerful, new Janitrol 52 Series provides low-cost central cooling with matchless reliability and efficiency. Here are some of the many ways new Janitrol 52 Series condensing units are demonstrating their excellence . . .

In Performance . . . condensing coils have greater area to dissipate more heat and to provide higher efficiency. Operation with outside temperatures as high as 125°F.

In Styling . . . modern, simple and functional cabinet that will be in the best of taste in any landscape plan. Finished in beautiful, durable, weather-resistant, automotive-type enamel.

In Economy . . . powerful, top-mounted fan draws in quantities of cooler ground air over the condensing coil, which is shaded from the sun's heat by louvers.

In Quietness . . . compressor and fan are unusually quiet in operation. Cabinet is acoustically treated with a weatherproof, sound-absorbent material.

In Safety . . . upflow exhaust protects nearby plants from hot blasts . . . enclosing grilles safeguard pets and children.

In Service . . . all components are easily accessible. Service panels may be removed without affecting operation, to make checks while unit is in full operation.

A.R.I. CERTIFIED

Full A.R.I. certification is your assurance this equipment meets or exceeds standards of the Air Conditioning and Refrigeration Institute. A five-year written warranty backs up your choice.

JANITROL AIR-COOLED SUMMER AND YEAR 'ROUND COMFORT SYSTEMS TO MEET ALL NEEDS

Janitrol Win-Sum-Matic Year 'Round Systems

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We Are Following the Pipeline and Doubling Sales Each Year — Ready Power

By Frank J. Versagi

DETROIT—"We are following the pipelines. Wherever natural gas is introduced in reasonable quantities and at reasonable rates, you will find our gas engine-driven air conditioning systems. And we are growing; our sales have doubled each year since 1954."

This enthusiastic introduction to a talk on natural gas engine-driven compressors was made by Norbert Hall, chief engineer of Ready-Power Co., Detroit, manufacturer of the gas driven units.

Facing up to the inevitable questions of first cost, operating cost, and efficiency, Hall stated:

"Within a range, it is just about as costly to build a seven cylinder gas-driven compressor at 20 hp. as at 40 hp. For this reason, first cost of our units in the 20-30-40-ton range is higher than comparable electric units. In the 50-60-ton range, we close the gap, and above that size, we can compete and even sell for less than electric compression systems.

"Operating cost, however, is generally so much lower on gas engine-driven equipment that any first cost difference can be made up in 1 to 3 years.

With natural gas available at 80 cents per 1,000 cu. ft., according to Hall, the operating cost of the gas engine-driven unit will compete directly with electrical equipment operating on power supplied at 1.05 cents per kwh.

Ready-Power's operating cost figures are based on a field-established rating of 13 cu. ft. of gas consumption per ton refrigeration per hour.

"The major advantage of the gas driven unit, other than low operating costs, is the capacity control and modulation it offers. On an electrical system which must be operated at standard electric motor speeds, modulation is essentially accomplished by unloading of cylinders. Such unloading occurs in fairly large increments," Hall said.

On a typical 60-ton Ready-Power unit, on the other hand, the gas engine may run from 900 r.p.m. (idle) to as high as 2,800 r.p.m. on military installations, a more usual 2,200 r.p.m. on commercial installations. This speed reduction can be accomplished with all seven cylinders loaded and it is possible for the 60-ton unit to produce 30 tons of cooling and anything between while holding the same evaporative temperature.

"For mechanical reasons, it is not feasible to drop the engine speed below 900 r.p.m. If more capacity reduction is required, the cylinders are unloaded one at a time, but the increment of reduction is smaller than in an electric driven compressor because the speed is slower. The great benefit from this type of capacity control is the absence of excessive cycling on low load, and the possibility of good humidity control."

Some 10% of Ready-Power's production is exclusively for humidity control, Hall stated.

The water-cooled, six-cylinder gas engines used on the air conditioning units will operate for 15-20,000 hours between major overhauls, Hall maintained. Maintenance cost averages about $21 per 1,000 hours of operation.

Power take-offs from the engine can be used to run supplemental equipment, especially the water tower pump. An advantage of this is that as the unit slows down due to a drop in load, the water pump also moves less water, maintaining a constant head pressure. The rate of water flow varies directly as the refrigeration load.

Water towers must be sized with consideration given to the heat generated by the gas engine itself, Hall showed. The rule of thumb is to add ⅓ of the evaporator load for engine heat rejection. Thus, a 60-ton unit would call for an 80-ton water tower.

On an air-cooled condensing system, the unit capacity must be de-rated as the ambient increases above design. Also, it is recommended that the unit be slowed down at high ambients, especially with R-22, to reduce head pressures.

Using evaporative condensers, the sump water can be piped to the engine cooling jacket. The engine heat will be released by the time the water has left the spray nozzles and before the water hits the first coils of the evaporative condenser, Hall said, adding that some dozen field units have given the information for this statement. Another method would be to use a sub-cooler for the water above the evaporative condenser.

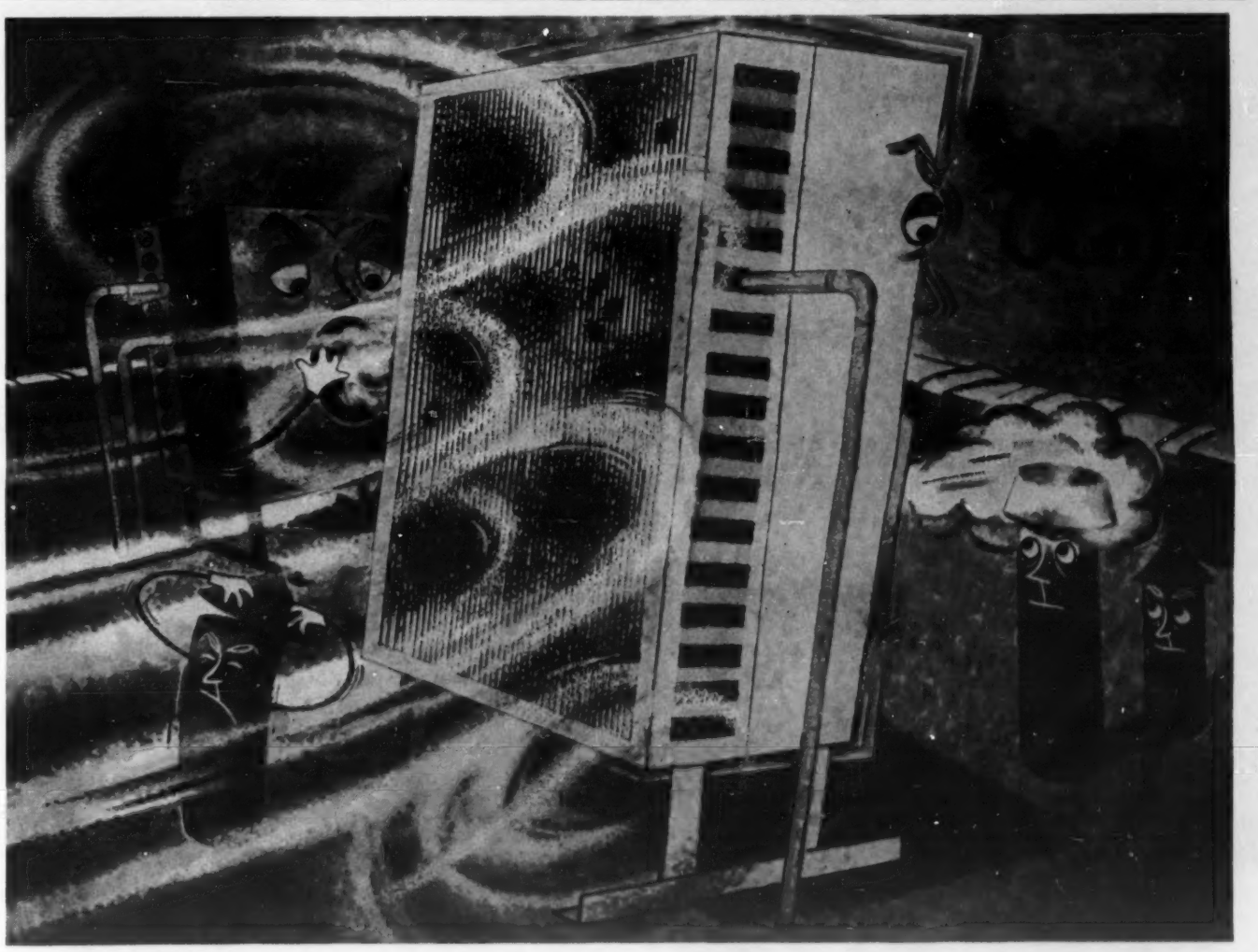
Exhaust heat from the gas engine has been used to operate an Arkla absorption air conditioning unit on at least one installation. The temperature in the exhaust pipe can reach 1,000 and the pipe must be handled and treated as a furnace exhaust would be.

"Noise is no real problem in most cases," Hall offered. "Actually, the tappets are probably the loudest thing you hear. We have mufflers which make it possible to use Ready-Power units even in residential areas.

Most people, according to Hall, have a tendency to compare the natural gas engine with the engine under their car hood. This is an invalid comparison, he said, and cited the trend toward converting many gas and oil driven engines to LPG. The basic reason for this is the great advantage to be obtained from introducing vapor, rather than droplets into the firing chamber, Hall explained. With a vapor there is no washing of the lubricant off the walls; there is no blow-by into the lubricating oil in the crankcase, no lowering of viscosity, no formation of sludge and acids, almost no formation of carbon.

While some Ready-Power units have been used on low temperature refrigeration, with evaporator temperature of 20° and 13°, most units are applied in air conditioning installations.

Units are available in sizes of 20 through 200 tons (two 100-ton systems).



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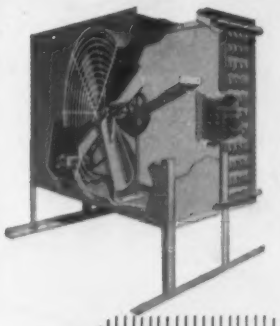

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Alco Offers 'Some Solutions' to Refrigerant Flow Problems

Superheat Measurement, Bulb Location Discussed at Detroit RSES

By Frank J. Versagi

DETROIT—Unless one thinks about it, he might conclude that refrigeration and air conditioning techniques have not changed much. "This is far from so," stated Richard N. Meyer, Chicago regional sales manager, Alco Valve Co., in a talk before the Detroit Refrigeration Service Engineers Society.

Significant Changes Bring New Problems

"Significant changes in procedures and techniques have created a series of new problems in refrigerant flow control," Meyer reported, "problems which didn't exist before." He grouped the problems into categories:

1. Those caused by the change from open-type, slow-speed compressors to hermetic, high-speed equipment;

2. those caused by the tendency to use large tonnage self-contained equipment close-coupled, rather than far-coupled as were old field-installed units;

3. those caused by variable head pressures inherent in the growing use of air-cooled condensers;

4. those cause by the use of unloaders on larger equipment.

"In addition, there are problems caused by the switch to higher-pressure R-22 in place of R-12.

The reverse cycle air conditioner, the heat pump, exerts pressure on both sides of the valve diaphragm. As a result, diaphragm life is shorter, some designs originally set for 5-year life failing in one year."

The rating of a thermostatic expansion valve changes when pressure drop across the valve changes, Meyer warned, stressing that many people tend to use the nominal rating stamped on the valve as gospel.

"A modern air conditioner may have a 100-pound pressure drop across the valve instead of the norminal 60-pound drop called for by design. Consideration must be given this fact in selecting or replacing the control valve."

Discussing the modern tendency to close-couple, he recalled that in the days when the compressor was in the basement and the evaporator several stories up, there was time to get rid of any liquid refrigerant which passed through the evaporator. "Today, the evaporator outlet almost feeds directly into the compressor.

Placing Thermostatic Expansion Bulb

"The thermostatic expansion bulb should be placed on a horizontal line, rather than a vertical line. In a horizontal line, the liquid, refrigerant, oil, and refrigerant vapor tend to stratify, so it is possible to locate the bulb where it will sense refrigerant temperature. In a vertical line, the swirling action is such that the walls of the tube are always covered with oil, and the oil must reach refrigerant temperature before the bulb can make the correct reading.

"Another thing to avoid is placing the bulb in a trap location, that is, in the lowest point of the suction line. If necessary, create a false trap just a little beyond the bulb so it doesn't get false readings from the oil-refrigerant mixture which always settles in a trap."

Meyer showed that placing the bulb in a well, fabricated into the suction line, serves the dual purpose of exposing the bulb to the refrigerant and vapor and of protecting it from ambient conditions.

Major Causes of 'Valve Hunting'

"On equipment larger than 15-ton, it is not unusual for a thermostatic expansion valve to serve on unloaded conditions 90% of the time. Stated another way, this means that for most of the operation, the valve is oversized. Oversizing," Meyer reminded, "is one of the major causes of hunting by a control valve."

Other important causes of valve hunting: Poor air distribution, bulb in wrong location, poor refrigerant distribution.

"Most orifice-type distributors work well when mounted in the correct position and when fully loaded. But on unloaded conditions, when the pressure drop is lower across the same size orifice, distribution becomes erratic. Newer distributors make use of the Venturi effect, rather than an orifice. Because fluid speeds through the distributor approach sonic, such a distributor gives good control from 25 to 150% capacity. And, they may be mounted in any position."

Pilot-Operated Valve May Provide Solution

On some installations, a pilot-operated thermostatic expansion valve supplies the solution to unloading problems, according to the Alco speaker.

"The variations in head pressure—unavoidable with the use of air-cooled condensers—causes a difference in pressure drop across the control valve. In cold ambients, the pressure drop across the valve may be so low as to make it impossible for the valve to control refrigerant flow.

"One accepted method of handling this problem is partial by-pass of liquid refrigerant into the condenser. But, if the total liquid supply is insufficient, vapor may be fed to the expansion valve. Incidentally, when more refrigerant is added to such a system, assure that receiver capacity is sufficient. Also, sight glasses on such systems should be mounted just

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ahead of the thermostatic expansion valve."

Sometimes an automatic expansion valve is used as a bypass from high to low side, passing vapor, not liquid. This keeps the back pressure up, and the technique was used on automobile air conditioners before development of a suitable magnetic clutch. At the beginning, the head pressure would build up excessively when the motor, and therefore the compressor, was speeded up; the low side pressure would then drop and cause a freeze up, Meyer explained.

Question & Answer Period Brings Out 2 Major Points

In the question and answer period following Meyer's prepared talk, two major points came out:

First, "If a gas-charged expansion valve ever gets colder than its bulb, the valve will lose control. In this case, change to a liquid-charged valve where this situation is unavoidable." (Alco is reported to be producing for one or two manufacturers a gas-charged valve which will not lose control under these conditions, but the unit is not being merchandised yet.)

Second, Meyer took strong exception to the traditional method of measuring superheat with two thermometers. "This method is completely invalid unless there is no pressure drop through the evaporator," he insisted. "Pressure drop through an evaporator is almost unavoidable. Therefore, taking two temperature readings, one downstream from the expansion valve and another at the evaporator outlet could result in a calculated negative superheat—which is obviously impossible."

The correct way, according to Meyer, is to take both the suction gas temperature *and the pressure* at the evaporator outlet, convert the pressure to its equilibrium temperature and determine superheat. "The pressure drop between the outlet and the compressor, where the gauge is normally mounted, is not usually significant. It is even possible, on valves with internal equalizer lines, to disconnect the equalizer and attach the gauge at that point."

If temperature readings are going to be taken at two points, also determine the pressure drop through the evaporator and make allowances for it, Meyer suggested. When a thermometer is to be placed at the distributor, be sure it is downstream—after the pressure drop has taken place. It is better not to attempt to mount a thermometer on the distributor. If temperature measurements are to be taken in inaccessible locations, Meyer suggested the use of thermocouples.

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Old 'Icyball' Still Operating

LOS ANGELES—A copy of the Crosley "Icyball" refrigerator, still in operating condition, has been acquired by the Recold Museum of Refrigeration and Air Conditioning, it was announced by H. T. "Hy" Jarvis, president of Recold Corp.

Donated by E. J. "Red" Sherwood of El Paso, Texas, the Icyball provided home refrigeration for short periods of time, without the use of ice, it was pointed out. The unit was in wide use around 1920.

Sherwood also donated to the museum a California "No-Ice" refrigerator. The refrigerator was one of the first attempts at eliminating the need for ice in home refrigeration.

The No-Ice refrigerator, patented in 1911, operates on the principle of evaporation, with asbestos providing the surfaces from which the evaporation takes place. The manufacturer apparently thought that only in California, Nevada, and Arizona was the humidity low enough to make the refrigerator operative, and the unit nameplate states that usage of the unit is limited to these three states.

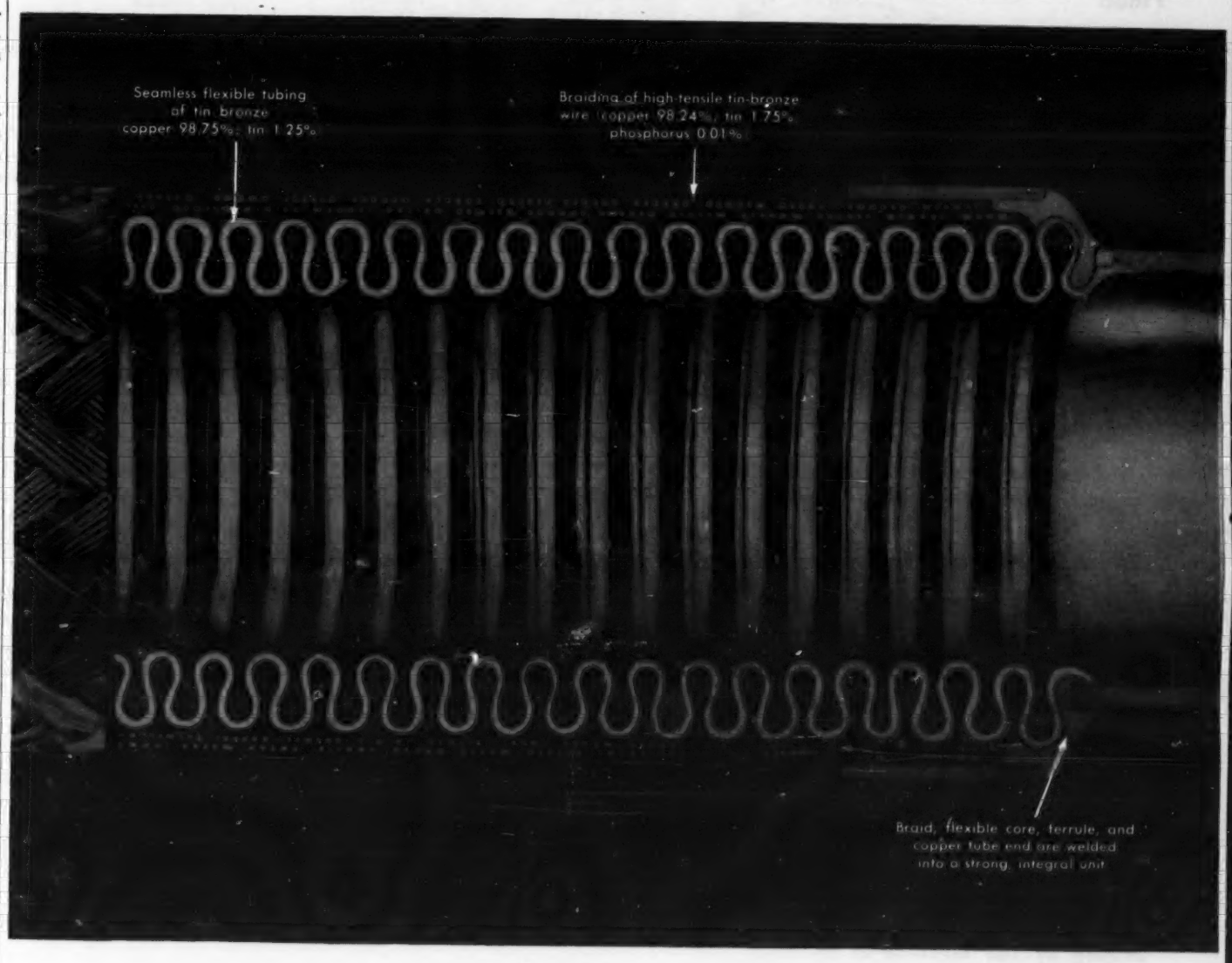
Walker, Versagi Help In RSES Service Manual

DETROIT — A new section, "Sludge Analysis," has been donated to the Refrigeration Service Engineers Society's "All Makes Service Manual" by General Chemical Div., Allied Chemical Corp.

The section describes simple chemical and physical tests which can be performed by servicemen and engineers to determine the extent to which any chemical reactions are occuring in the refrigeration system. General Chemical attributes aid in preparation of the paper to Dr. Walter O. Walker, "Genetron" consultant and dean, Div. of Research and Industry, University of Miami, and Frank J. Versagi, NEWS technical editor.

John Spence, educational director, RSES, also announced the new name for the "All Makes Service Manual" will be "RSES Refrigeration and Air Conditioning Service Applications Manual." For convenience, the manual will be referred to as "SAM" from the first letters of the last three words.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.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11-17
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Maybe We're Doing All Right

(Concluded from Page 1)

In contrast, according to Prof. Hardin:

Progress ensues from non-conformists. It occurs at random, and necessarily it entails the enormous waste which ensues from random experiments.

"Natural selection acts like a ratchet to preserve each tiny element of advancement. Thus do nature's beautifully adapted machines come into being," he observes.

Conspicuous success in evolution, as in human affairs, is the prelude to extinction. Why the dominant dinosaurs vanished at the end of the Mesozoic Era is no cause for wonder to the scientist. Reason: "Loss of adaptability of a species is a result of the inevitable tendency of a rapidly breeding population to become genetically uniform."

(When an animal species becomes uniform, a sudden change in environment wipes it out.) "Mankind should emulate nature's example in accommodating waste, and *encouraging* novelty, in its political and corporate structures.

"Surely we have seen enough of social power to realize that pressure toward uniformity is even greater in the cultural realm than in the biological. In Nature, on the other hand, out of luxuriant waste winnowed by selection, come designs more beautiful and in greater variety than man could plan.'

Judging by this all-shook-up criterion, the air conditioning industry is getting along pretty well after all.

Obviously it has been wasteful, mutatious, disputatious, and continually running rapidly off in all directions.

It has compounded confusion, multiplied mistakes, and failed to achieve that profitable maturity devoutly desired by so many of its practitioners.

Guiltily, this editorialist confesses that he, too, has been raspingly critical of such "waste." A recent random example:

"As many as 21 different heat pump designs—each incorporating the same basic errors—have been on the market at the same time.

"Salespeople and engineers *in the same company* tell totally different stories, and neither group seems aware that it is contradicting the other.

"Most manufacturing and distributing organizations seem to be shooting from the hip. The fast draw is nullified by blind aim. The Right to Know, in too many cases, seems to have been supplanted by a refusal to learn."

Perhaps, in light of Prof. Hardin's earthquaking thesis, the air conditioning industry will do better in the long run *because* it seems to be immature and wasteful at the present moment.

An oft-belabored touchstone is the American automobile industry which — until George Romney and the foreign car invasion threw it for a loss—was a splendid model of maturity, respectability, profitably, and infallibility.

These fellows "had it made," it seemed. Their market researchers told them that The Auto was a "Status Symbol" *sine qua non.*

Bigger and better the car on your driveway, the more envious your neighbors would be, professional consultants reported. (Making your friends hate you, apparently, was deemed to be mankind's highest aspiration.)

Enthralled by high-priced charlatans who posed as all-knowing market researchers, automotive tycoons fell into a sociobiologic trap. Continually they *built conformity*—and boredom—into their products.

At a raucously bibulous press conference some years ago a Detroit automobile tycoon explained why his firm was so successful:

"Everybody wants to feel (a) younger, and (b) more important. So, every year we give the old lady more color and the old man more horsepower."

Simple, eh? Nothing to it. Just make automobiles longer, lower, heavier, faster, less comfortable, more expensive, and so alike that you can't tell one from another.

You all know what happened subsequently.

Essence of America's contribution to civilization is Freedom of Choice—which was violated in this instance. Inasmuch as U.S.A. autos tended to become indistinguishable, unreliable, and unrealistic jukeboxes-on-wheels, American consumers rebelled.

Their aspiration was two cars in the garage—not two garages for one oversized, overpriced car. So they bought MGs, Austin-Healeys, Simcas, Volkswagens, Renaults—and put George Romney back in business.

Is there a lesson in this phenomenon for the cooling-heating-air conditioning business?

Right! Several, in fact. Such as:

(1) Be skeptical about advice emanating from the new breed of P. T. Barnums, those pee-aitch-dee market theorists.

(2) Be wary of "following the crowd" in product design. Consumers want to exercise their American *right to a choice.*

(3) Conformity—in design, selling methods, appearance, behavior, "corporate image," or advertising appeals—breeds tired blood in consumers.

Therefore, it may be wise to encourage the individualist, the non-conformist! Biologically and historically his species *survives,* because it can adapt to sudden changes of climate (business or otherwise).

In a business organization this disturbing character may be a nuisance because he doesn't "fit the pattern." Eventually, though, your "sport" will raise the pay of all associates who are tolerant enough to put up with his idiosyncracies—that is, if he is creative.

Blessings on thee, Little Man—be you dealer, contractor, wholesaler, inventor, or daring small manufacturer.

If you have the courage to be DIFFERENT, if you don't fall into the dull Organization Pattern, essentially individualistic Free Enterprise will help you prosper, and pay off your co-workers and the industry you serve in coin of the realm.

Consumers—let's repeat—*desire* Freedom of Choice. Let's give it to them, by daring to be different in product design and merchandising methods.

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"God grant that not only the love of liberty but a thorough knowledge of the rights of man may pervade all the nations of the earth, so that a philosopher may set his foot anywhere on its surface and say: 'This is my country.' "—*Benjamin Franklin.*

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NEMA Approves Reorganization Plan To Allow Sections Greater 'Autonomy'

ATLANTIC CITY, N. J.—The National Electrical Manufacturers Association has approved a reorganization plan which "merges the efficiencies of corporate management with its present top-flight trade association practices," it was announced at the group's recent annual meeting here.

The new organizational format for NEMA was presented by W. C. Wichman, chairman of the Planning Committee, which drafted the sweeping internal changes. He is vice president of General Electric Co. and general manager of its Hotpoint division.

Changes Called for

In essence, the Planning Committee called for these changes:

1. Formation of eight semi-autonomous divisions, composed of industry product sections having mutual interests, guided by their own boards of directors, and represented in NEMA's policy-making circles by their own duly-elected divisional vice presidents.

2. Broadening of NEMA's product scope pattern so that newly named divisions can go beyond designated products within their constituent sections to "include a number of important branches of the electrical manufacturing industry" which now are outside of NEMA's restricted province.

3. Expansion of the association's membership base in line with broader division scopes and the new concept for a more inclusive industry-wide trade organization.

The revisions recommended, Wichman said, "introduce the life-giving principle of decentralization . . . and allow the product sections, the building blocks of NEMA, to control their own destinies, to the end that NEMA can successfully adapt itself to the changes of the past and the challenges of the future."

One significant step planned under the reorganization concept is increased emphasis on more effective NEMA business development programs to supplement presently solid standardization and statistical activities, he pointed out.

Analysis of Current Edition of Electrical Code

An analysis of the current edition of the National Electrical Code was released here in connection with the NEMA meeting. The 107-page review of code changes was compiled by Howard Michener, assistant manager of the NEMA Engineering & Safety Regulations Dept.

One of the most important requirements of the present (1959) code is that "single family residences, with an electrical load of 10 kilowatts or more, have a minimum service of 3-wire, 100-ampere capacity."

Also, the new code re-states that one receptacle outlet should be installed for every 12 linear feet of usable wall space, measured horizontally, around each room.

Copies of Michener's analysis may be obtained from the National Electrical Manufacturers Association, 155 E. 44th St., New York 17, N. Y., at 50 cents.

It was also announced at the meeting that national responsibility for administration of the Medallion Home Program will be assumed next year by NEMA.

NEMA will provide headquarters staff to make sure that standards set or revised by local utilities meet established minimums, to provide promotional material, to make available to participating utilities a continuing supply of Gold and Bronze Medallions, and to prevent unauthorized use of the Medallions, it was stated.

Initiated by the Live Better Electrically Project in 1958, the program has established industry standards.

"The Medallion Home Program is currently spearheaded at the local level by over 300 power suppliers, who are exclusively empowered to award Medallions to qualifying homes in their service areas," NEMA said. "Industry surveys indicate that over 170,000 new homes have been certified for either Bronze or Gold Medallions during 1958 and 1959.

"Bronze Medallion Home standards require as a minimum that homes be equipped with: (1) an electric range and three other major appliances; (2) Light for Living; and (3) Adequate Wiring for plenty of Housepower.

"Gold Medallions are awarded to homes that excel electrically. A key feature of such homes is electric house heating.

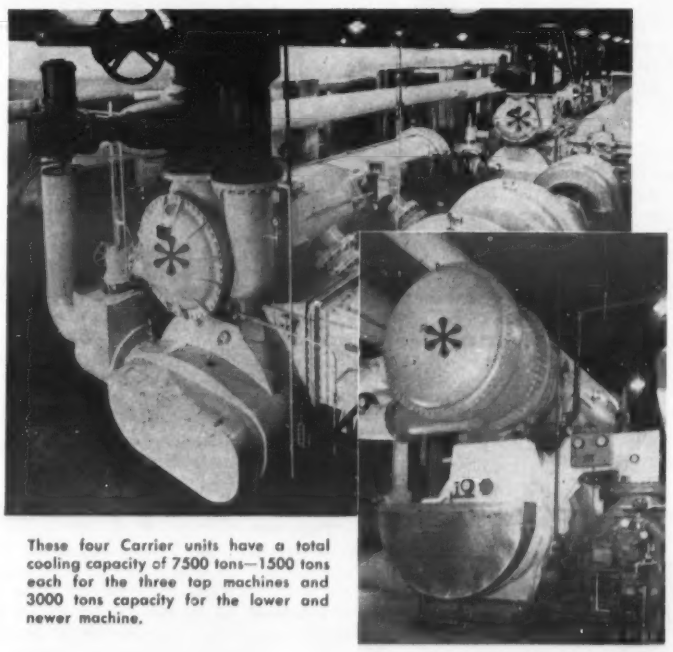
N. J. MacDonald of Elizabeth, N. J., president of The Thomas & Betts Co., was elected president of NEMA at the closing session. Wichman was elected vice president.

Clarence T. Evans, consulting electrical engineer for Cutler-Hammer, Inc., Milwaukee, was honored at the closing general luncheon for having devoted a half century of service to the electrical industry.

Wolverine Trufin Type S/T.

Gateway Center, Pittsburgh, Pa.

WOLVERINE TRUFIN® TYPE S/T helps Carrier cool GATEWAY CENTER



These four Carrier units have a total cooling capacity of 7500 tons—1500 tons each for the three top machines and 3000 tons capacity for the lower and newer machine.

Carrier engineers have high praise for Wolverine Trufin Type S/T—the integrally finned refrigeration condenser tube. They speak from experience in using Trufin in Centrifugal Refrigeration Machines for air conditioning the buildings of Pittsburgh's beautiful Gateway Center.

"The ability of Trufin Type S/T to pack a lot of heat transfer surface into a small space, helps us design refrigeration machines which require a minimum of space and weight for the required cooling capacity," say the Carrier men.

In the Gateway Center installations, more than 200,000 feet of integrally finned Trufin Type S/T, was used in the coolers and condensers of three 17M64 Carrier Centrifugal Refrigeration Machines of 1500-ton capacity each, and one 3000-ton capacity 17PM470 Carrier unit.

If your company is involved in refrigeration, air conditioning or other heat transfer applications, Wolverine Trufin Type S/T can help you do a better job—just as it does Carrier Corporation.

For complete information write for your copy of the Trufin Catalog.

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940 N. Sycamore Ave.,
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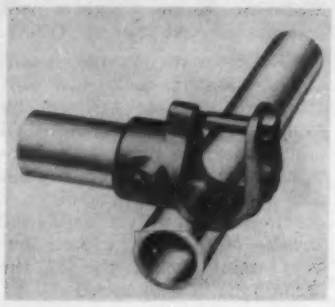
Fitting Aids Addition of Units to Pipe Structure

● A new "Kee Klamp" slip-on fitting makes it possible to add units to structures built of pipe without dismantling the existing assembly, according to a recent announcement by Kee Klamps North America, Ltd., Dept. AHRN, 1079 William St., Buffalo 6.



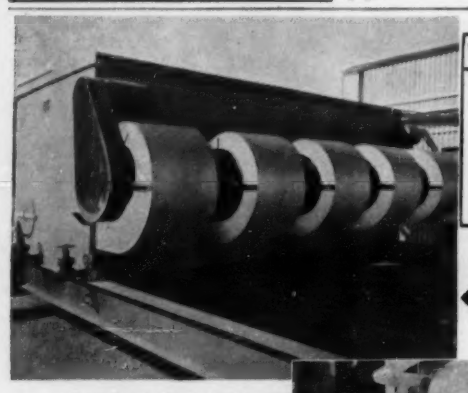
Fitting No. 110 slips over pipe already in place and is locked in position with nut and bolt as part of the fitting assembly. The hub end of the fitting slips over the newly added pipe and is locked in rigid position by set screw capable of supporting a direct load of 4,000 lbs., according to the manufacturers.

Fitting No. 110 is used to add shelf frames or make extensions to existing storage, pallet or other racks built of regular pipe. It is made for pipe sizes ¾ to 1½ in., it is galvanized to match the other 57 Kee Klamp slip-on fittings, which are made for pipe sizes ¾ to 2 in. for building pipe structures of any shape and size for any load condition, using ordinary plain end pipe.

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

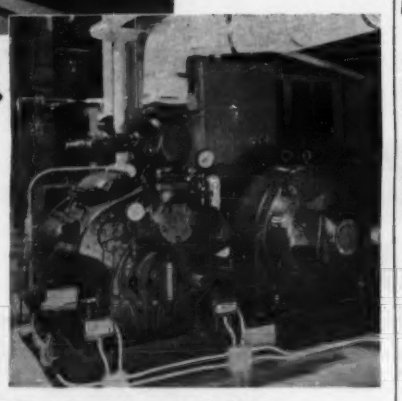
Tell him: "AH&RN sent me!"



View of the Vilter VXF evaporative condenser located on the roof just outside the compressor room.

Vilter Report Card

Grade	Service Record
A	Efficient, alternating zone-load operation.
A	Exceptionally low operational cost.
A	Uninterrupted air conditioning service.
A	Smooth operation with minimum maintenance.



View of one of the two Vilter 8-cylinder compressors with a 100 h.p., 1175 r.p.m., part winding motor drive. These compressors are located on an upper floor, above an office.

Cool THINKING

Cool FUN

in

Marquette University's

Air Conditioned Brooks Memorial Union

Brooks Memorial Union is the hub of many Marquette University activities—professional meetings and conferences attracting a national audience, exciting school dances, excellent food facilities in the cafeteria, snack bar and private dining rooms. One key to its year-'round popularity and usefulness is the air conditioned comfort provided by the Vilter installation on this Milwaukee Campus.

To provide adequate air conditioning on a conservative appropriation and to minimize yearly operating expenses, the system was laid out to provide alternating zone-load cooling based on a "traffic flow" and usage pattern. During normal occupancy the entire Union is cooled. However, at peak loads only part of the conditioned space in Brooks Memorial is cooled at one time. As the peak occupancy load shifts from cafeteria and grill to the ballroom-conference room, the air conditioning is also shifted. Results of operating in this manner have been highly satisfactory.

Vilter equipment furnished on this job included two 8-cylinder VMC compressors; VXF Freon evaporative condenser; Freon liquid receiver; heat exchanger, cooling coils, motors, and controls.

"Very satisfactory performance with only routine maintenance," is the praiseworthy comment by Marquette University officials.

Let Vilter help you with your air conditioning and refrigeration requirements.

Write for these helpful bulletins to: The Vilter Manufacturing Company
Dept. RN-804, 2217 S. First Street, Milwaukee 7, Wisconsin

Bulletin 631 Vilter Uni-Chiller

Bulletin 820 Vilter VMC Freon Compressors

Bulletin 732 VXF—VSC Evaporative Condensers

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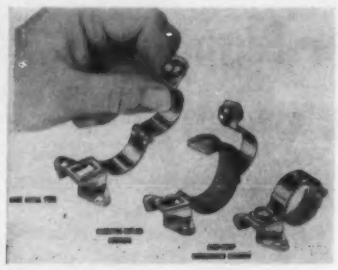


Fastener Opens, Closes Without Distortion

● A new quick-action line clamp, known as the TA5000 series, that the company says can be easily opened and closed indefinitely without distortion is offered by TA Mfg. Corp., Dept. AH&RN, 4607 Alger St., Los Angeles 39.

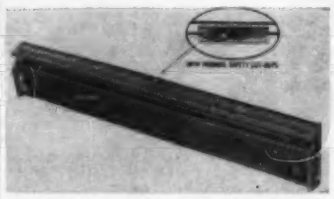
The self-contained "Flip-Loc" fastener is recommended for "all manner of electrical, hydraulic, and pneumatic lines that have to be periodically removed for maintenance, access to adjacent equipment, etc."

Design features include "a rugged hinge built into the parent metal itself, which allows the clamp to be opened and closed without any binding or distorting; an exclusive quick disconnect nut that can be disengaged with just one and one-quarter turn of a screwdriver on its integrated bolthead; it can be opened and closed without removing clamp from its fixed mount."

The fastener is available in a variety of sizes from ¼ in. to 6-in. diameter.

Masking Tapes Available

● A complete line of high temperature or regular die cut masking tapes manufactured for production work and spray paint in roll form with skip-slit pull down liner for ease in handling is available from M & C Products Co., Dept. AH&RN, 4932 Disston St., Philadelphia 35.



Heaters Have Thermal Safety Cut-Outs

● Development of new thermal safety cut-outs which are now built into every "Electrofin" heater has been announced by Berko Electric Mfg. Corp., Dept. AHRN, 212-40 Jamaica Ave., Queens Village 28, N. Y., manufacturer of Electrofin electric convection baseboard heaters.

Its thermal cut-outs, the company says, represent a "reliable method of assuring positive safety and protection — protecting the homeowner from himself—against overheating due to accidental or deliberate blockage of air outlets, or over-voltage conditions.

The cut-outs are small (25 amp.) bi-metal thermostats installed in the top leading edge of every Electrofin heater. They are spaced approximately 20 in. apart, the number used depending on the length of the heater.

"The cut-outs are wired in series with the heating elements," it was explained.

Portable Pressure Washer Developed

● A new type of portable, pressure washer has been developed by Pressure Wash Mfg., Inc., Dept. AH&RN, 2333 West Wells St., Milwaukee 3.

"Pressure is sustained at 150 p.s.i. and delivers a maximum of 3 gals. a minute at the gun," the company said. "Spray and forced displacement of the various cleaning solutions are controlled through the same trigger type gun. Water and chemically proved detergents do all the cleaning. Heat is not required."

Cleaning applications are said to include all types of heating and air conditioning cores, coils, and filters. Freedom from the cost of dismantling the equipment for cleaning purposes is an advantage claimed by the manufacturer.

"As an aid to keeping the area clean and operating a set of rubberized bags and run-off sleeves has been developed," it was noted. "Overhead space heaters are flushed-clean right in overhead position. All dirty water is trapped by the bags and conducted away into catch-all barrels at floor level."

Powers Announces Reverse Relay

● Pneumatically-controlled air conditioning, heating, and ventilating systems can be given "fail-safe" protection in case of air line failure with its compact new reverse relay, according to the Powers Regulator Co., Dept. AHRN, 3434 Oakton St., Skokie, Ill.

The type 783 reverse relay is an auxiliary device which gradually reverses the action of pneumatic operated valves, motors, and dampers, the company explained.

The reverse relay converts normally-closed pneumatic equipment to normally-opened operation. When air pressure falls to zero, the equipment reverts to its normally-closed operation and shuts down.

The relay's size is 1 1/16 in. diameter by 2⅝ in. long and is 60% smaller than its predecessor model. It mounts on a valve or damper motor, behind control panels, or next to a wall-mounted controlling instrument.

Cutting Oils Selected

● Two new types of cutting oils, selected as best suited for use with its line of pipe machines, have been introduced by Toledo Pipe Threading Machine Co., Dept. AH&RN, Toledo.

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

NEWS' CLASSIFIED ADS

Organic Chemical Deactivates Scale

● A new organic chemical, "Aidco 10," which is said to deactivate scale from boilers, heat exchangers, condensers, pipelines, and refrigeration coils at a low cost is being produced by Alloy Industries Development Co., Dept. AH&RN, 2211 Firestone Blvd., Los Angeles 2.

Aidco 10 is practically odorless, non-toxic, non-flammable, and non-corrosive, according to the company, which is a subsidiary of Alloy Die Casting Co. The ph of Aidco 10 is between 9-11 and the specific gravity is 1.14, it was stated. Aidco 10 can be used safely and conveniently without special protective clothing, the company said.

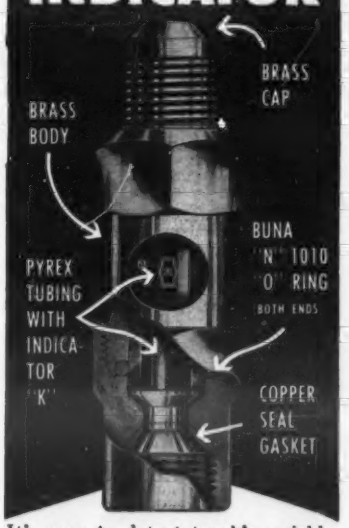
"For normal de-scaling, 1 gal. of Aidco 10 is added to 6 gals. of water and circulated at a temperature from 160° to 180° F. at a minimum pressure of 25 p.s.i.," it was explained.

DETECT TROUBLE FAST!

IN ANY AIR CONDITIONING AND REFRIGERATION LIQUID LINE

KEROTEST MODEL R81C

IN-LINE Liquid INDICATOR



It's easy to detect trouble quickly in refrigeration lines with this indicator. Letter "K" is etched on pyrex heat-resisting tube which shows through sturdy brass body at sight port. When "K" is not magnified, it indicates a shortage of refrigerant or a clogged line. Available in male and female flare sizes. Maximum operating pressure —500 p.s.i. and maximum temperature 200° F. Easy to install.

See your Kerotest wholesaler!
Ask for Model No. R81C.

KEROTEST

KEROTEST MANUFACTURING CO.
2502 Liberty Avenue
Pittsburgh 22, Pa.

Low-Cost Leak Standard Available

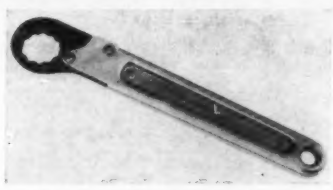
● A low-cost leak standard for calibrating and checking operation of halogen-sensitive leak detectors is now available from the Instrument Dept., General Electric Co., Dept. AH&RN, West Lynn, Mass.

Company engineers said the device was developed "to make the benefits of calibration practical for all users of halogen leak detection equipment."

A small portable unit weighing about 3 lbs., it provides an adjustable reference leak of known rate. In operation, it releases refrigerant gas through a tiny capillary tube at manually controlled rates—indicated on a circular dial—ranging up to about three ounces a year.

The device, which requires no power supply, is suitable for calibrating leak detectors used for locating leaks of R-12, R-22, or R-114 refrigerants. The standard is intended for use with Types H, H-1, H-2, H-3, H-5, and H-6 leak detectors.

Company engineers pointed out that the higher priced leak standards, which have been available for several years, will still be sold for specialized applications.



Ratchet Designed for Close Quarters

● A new light-weight ratchet wrench which speeds fitting assembly and is recommended for work in close quarters is now available from The Imperial Brass Mfg. Co., Dept. AH&RN, 6300 West Howard St., Chicago 48.

Designated the "Kwik-Tite" ratchet wrench (Catalog No. 499-F), the tool "is ideal for making up tube fittings, high pressure hose fittings, hydraulic hose fittings, pipe fittings, and other applications," the company said. It may be used also for fastening machine nuts and hex fasteners.

"Kwik-Tite Wrenches are simple and fast to operate," it was stated. "You only place the wrench jaws over the side of the nut and lift handle slightly. The wrench will snap closed and ratchet. To remove, simply apply slight hand pressure, moving the wrench handle forward and down. This will cause jaws to snap open."

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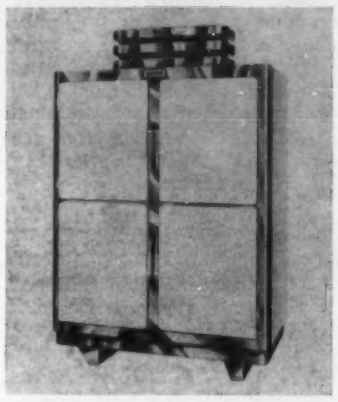
Medium Temperature Unit Converts to Freezer

● To help solve problems of allocating the proper proportion of space to medium temperature (38°) and freezer (0°) refrigeration, its "convertible" new Series MU has been introduced by Koch Refrigerators, Inc., Dept. AH&RN, 401 Funston Rd., Kansas City 15, Kan.

Units in this series are installed as medium temperature refrigerators but can be converted to freezers "without any complicated electrical or mechanical installation," the company said.

The MU line provides a wide range of cabinets constructed to standard Koch freezer (Series MF) specifications, but which are installed initially with a medium temperature refrigeration "plug" unit, it was explained at the time of introduction.

As the need for freezer space increases, the "plug" can be lifted out and exchanged for a low temperature unit with a minimum of effort.



"The total ultimate cost of the cabinet after conversion is the same as the initial cost of a corresponding Koch zero temperature unit, plus a small annual cost which is the equivalent of a rental fee for the medium temperature 'plug,'" it was stated by the manufacturer.

Offers New Line of Downflow Gas Furnaces

● A new line of deluxe "high c.f.m." downflow gas furnaces has been introduced by The Trane Co., Dept. AH&RN, La Crosse, Wis.

The line includes three models which are designed for use in homes where cooling requirements are comparatively larger than heating.

"The AGA-approved furnaces have high capacity fans that provide air volumes up to 1,600 c.f.m. for cooling," the announcement said. "The high static air delivery required for proper summer air conditioning duty operates at low noise levels. Oversize fans and motors are standard on these furnaces."

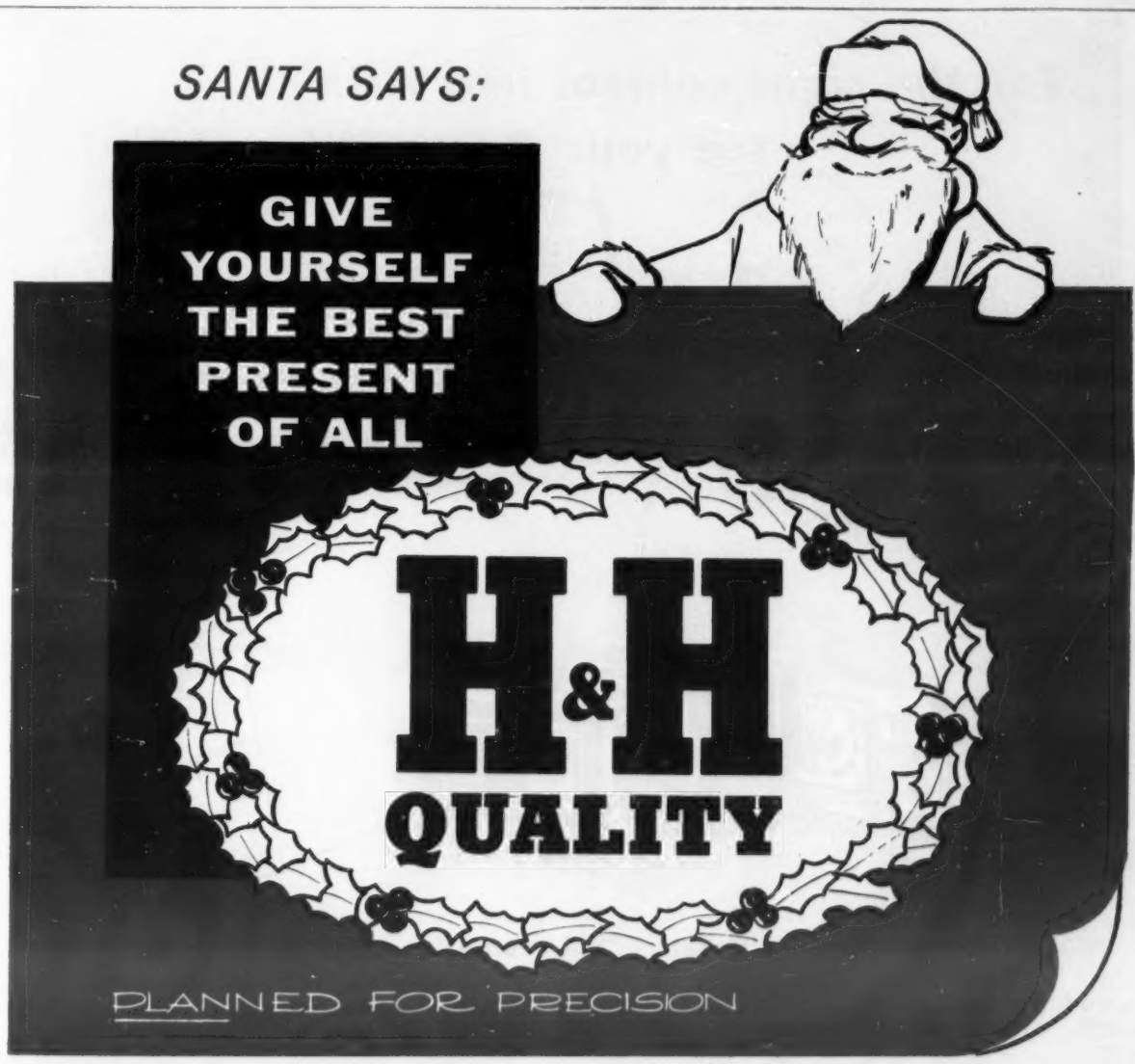
The furnaces range from 77,000 to 115,000 B.t.u. ratings. When furnaces are used as central air conditioning units, fan cooling capacities range from 1,100 to 1,600 c.f.m. for 2, 3, and 4-ton cooling units, Trane said. The furnaces have single-speed ½-hp. motors for lower c.f.m. requirements and two-speed ¾-hp. motors for higher c.f.m. capacities.

Thatcher Bows 'Golden Oilmaster' Boiler

● Announcement of its new "Golden Oilmaster" boiler was made recently by Thatcher Furnace Co., Dept. AH&RN, Garwood, N. J.

Oil-fired for steam or water installations, it is available in either extended or flush-type casing finished in gold and blue. The fully automatic unit, Thatcher said, complies with the codes of the Institute of Boiler & Radiator Manufacturers and is approved for installation on combustible floors.

An optional feature is its all-copper built-in tankless domestic hot water heater. The unit has "extra-thick" glass wool insulation. Sections are factory assembled.



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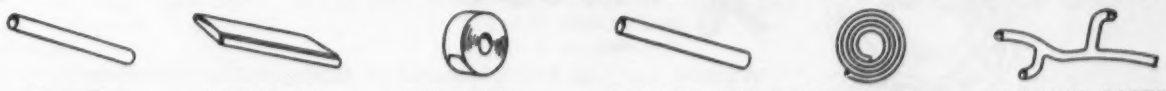

TECH CENTER

Arkla Year-Round Absorption System

By Frank J. Versagi

Arkla Air Conditioning Corp.'s "Sun Valley" gas air conditioners are basically gas-fired lithium bromide-water absorption units, water cooled. The absorption unit is normally mounted indoors and any water saving device used, such as Arkla's own evaporative cooler, is placed outdoors. At this writing Arkla is field testing several chilled water-hot water combination units for complete outdoor application, with an air handling unit inside.

The present units can be used for heating as well as cooling, a fact which makes them competitive in some areas with electric heat pumps. (Some Arkla engineers hold that the absorption unit is truly a heat pump in the exact sense of the term, but others are reluctant to use the term because of its popular association with reverse-cycle electric air conditioning systems. Further, Arkla spokesmen state flatly, "There are no areas where the electric heat pump is as economical for heating as our unit.")

Water is the refrigerant in Arkla's absorption unit, and **lithium bromide solution is the absorbent.** Since water is the refrigerant, operating pressures are low; actually, **on either heating or cooling the lithium bromide - water unit operates under a deep vacuum.** As in all absorption systems, there are no moving parts, as such, and again in this case the refrigerant and absorbent move through one system due to pressure gravity differentials.

As pointed out earlier in this series, the terms STRONG SOLUTION and WEAK SOLUTION are used in different ways by the several manufacturers of absorption equipment. In this discussion of Arkla's unit, STRONG SOLUTION refers to the solution with a high concentration of refrigerant—in this case, water; WEAK SOLUTION refers to the absorbent solution with a lower concentration of refrigerant, or water.

Refer to Figure 1: the solution in the GENERATOR is strong solution, with a high concentration of refrigerant which must be boiled off. This boiling action essentially separates the strong solution into slightly elevated - pressure refrigerant vapor and a remaining weak solution, shown in the bottom of the SEPARATOR, to where they are lifted by the vapor lift action in the vertical connecting tube. This separator is a logical place to begin a study of the cooling cycle in this absorption unit.

The major portion of the slightly elevated-pressure refrigerant vapor travels from the separator to the CONDENSER, where it is condensed to a liquid by action of the externally supplied cooling water from well, tower, or city main. Now in liquid form, the refrigerant, water, flows into the cooling coil or evaporator, where it absorbs heat from air passing over the coil surface in the usual manner.

This Tech Center is one of a group of articles describing operational characteristics of marketed absorption systems. Other descriptions will appear in forthcoming issues.

The Tech Center series on Applied Electrical Theory will continue next week with a discussion of FUSES and PROTECTIVE DEVICES.

A restriction between the condenser and the evaporator supplies the pressure differential needed to separate the high side from the low side, although in this case the pressure differential is in millimeters of mercury and both high and low side are in vacuum.

As is normal, the refrigerant in the cooling coil is vaporized so that leaving the evaporator there is low pressure vapor. In the ABSORBER, directly adjacent to the evaporator, this refrigerant vapor is absorbed into the WEAK solution, forming STRONG solution which travels through the heat exchanger back to the generator.

In the bottom of the separator, from where we followed the path of the refrigerant vapor, there is the weak solution generated by the action of the generator. This weak solution, of course, has the ability to absorb refrigerant and is also referred to as the ABSORBENT.

This absorbent drains from the separator down through the HEAT EXCHANGER to the absorber. This flow of weak solution can be accounted for by gravity action alone, but it is aided by the pressure difference existing between the separator and the absorber. Study of Fig. 1, especially the vapor lines connecting the several major components, will show that the evaporator and absorber are exposed to low vapor pressures; the separator, condenser, heat exchanger are exposed to higher vapor pressures.

A liquid trap below the CONCENTRATION CONTROL CHAMBER isolates these pressure differentials.

The heat exchanger increases the efficiency of the over-all operation in two ways. First, absorption of refrigerant, water, into lithium bromide is more efficacious at low temperatures. (Thus, inlet cooling water passes through the absorber.) Second, since the strong solution must be boiled in the generator, it is advantageous to raise the temperature of the strong solution traveling to the generator from the relatively cooler absorber.

Should the load on the unit alter appreciably, the concentration control chamber prevents significant unbalance between absorbent and refrigerant by adjusting relative concentrations as condensing temperature changes.

Consideration of the pressures and temperatures at several locations of the Arkla unit will aid in understanding its operation and comparing its characteristics with other absorption units.

Depending on the size of the unit, gas input to the generator on cooling cycle is 80-120 B.t.u.h. The strong solution boils at varying temperatures depending on its proportion between lithium bromide and water, but the

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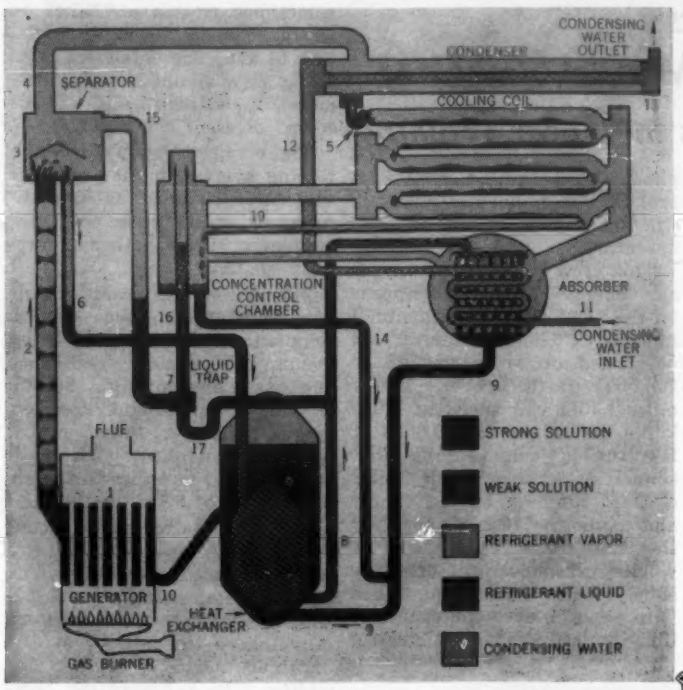


FIG. 1—Schematic diagram of Arkla "Sun Valley" gas air conditioner operating on cooling cycle.

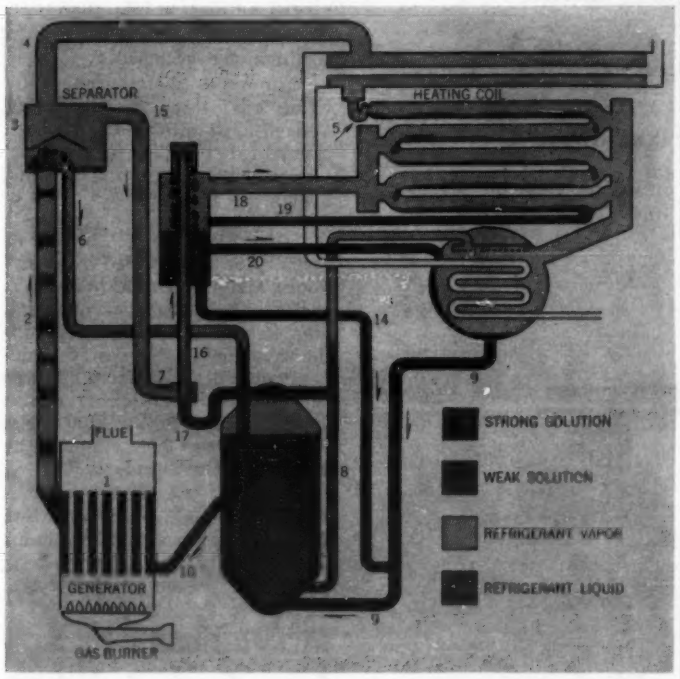


FIG. 2—With condenser water shut off, the cycle converts to a heating rather than cooling function.

nominal temperature of the percolating liquid/gas mixture on the way to the separator is 175° F. Pressures here are 50-60 mm of mercury.

With 85° inlet water, condenser outlet water is 103-105°.

Low side pressure is 6-10 mm of mercury, and the evaporator operates at about 46-48°. (Boiling point of water is 32° at 4 mm.)

A 65-70° temperature drop takes place in the heat exchanger.

Cutting off the supply of condensing water converts the Sun Valley unit to a heating system. Normally, greater gas input is supplied by turning on an additional burner at the generator. Operation up the tube to the separator is the same as during cooling operation. However, since there is no flow of cooling water, the vapor which rises to the condenser causes an increase in pressure.

The vapor cannot escape except in small quantities through the restriction between the condenser and evaporator.

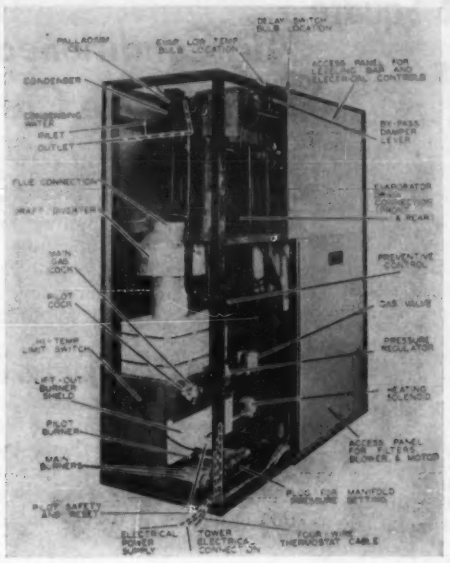
The total increase in water vapor pressure permits the vapor to pass down from the separator, break the liquid trap which on the cooling cycle isolates high from low side, up into the concentration control chamber. The flow of vapor is such that it carries with it into the secondary chamber droplets of lithium bromide solution which has drained from the separator into the trap.

From this secondary chamber the high temperature vapor travels to the former evaporator, now a heating coil, where it condenses while transferring heat to air passing over the coil.

The liquid returns to the secondary chamber where it mixes with the lithium bromide solution formerly brought up in droplet form; the mixture, now strong solution, returns to the generator.

Pertinent pressures and temperatures during heating are: 240° in the connecting tube between the generator and the separator; 170° coil (135° air) with pressures at about 300 mm of mercury. This pressure is equivalent to just under 6 p.s.i.a.

Akla also produces 25-ton absorption water chillers operating with steam, and using a similar lithium bromide cycle.



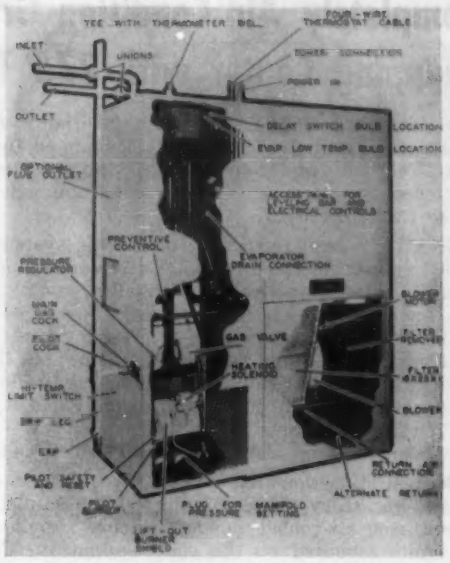


FIG. 3—Two cutaway views of the "Sun Valley" units, showing positions of major components.

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Completely Air Condition Grant Square Shopping Center with 275 Tons

OKLAHOMA CITY — Grant Square Shopping Center here is completely air conditioned with equipment supplied by Westinghouse Electric Corp.

Grant Square consists of 82,000 sq. ft. divided into 21 separate retail stores ranging in size from 814 to 14,875 sq. ft.

The Westinghouse equipment is of various sizes and types depending on the individual store requirements. Total tonnage for the entire shopping center is 275 tons.

Because the shopping center is all one story, most of the stores use air-cooled condensing units mounted on the roof and air handling equipment suspended from the ceiling directly beneath each condensing unit.

Heating in many of the stores is supplied by a hot water coil in the air handling units with a separate boiler for each of the stores.

This system was selected for its economy of installation, flexibility, zoning, and conservation of floor space, according to Westinghouse.

Some of the smaller areas, such as the barber shop, are air conditioned with an upflow furnace, a "V" type coil, and an air-cooled condenser.

Air Engineering, Inc., Westinghouse distributor in Oklahoma, supplied and installed the equipment. Fred Pojezny was the architect for the project and Richard A. Brand, Inc., the general contractor.

Without Firing a Rocket

Air Conditioned Missile Simulator Keeps Nike Crews In Good Training

SYRACUSE, N. Y.—Without firing a single expensive rocket, Nike crews at dozens of Army sites around the country practice daily the downing of "enemy" aircraft—keeping razor sharp for any emergency, according to a report by Carrier Corp. here.

TRAILER AIR CONDITIONED

However, the enemy planes are merely blips on the Nike radar scopes put there by a versatile missile simulator which plugs into a Nike battery and is housed in a 20-ft. air conditioned trailer.

The electronic equipment, called the 15-D-2 by its manufacturer, International Telephone & Telegraph Corp.'s Federal Div., is manned by five men who match wits with the Nike operators.

This crew causes as many as six "enemy" aircraft to appear on the Nike radar scopes simultaneously. The "invaders" can be picked up at ranges up to 200,000 yards (over 1,100) miles), and can speed at 2,000 knots as high as 80,000 ft. Realism is achieved by also simulating background radar clutter, jamming by the enemy and temporary loss of target by the Nike crews.

Nike personnel wait until the enemy comes within range, then "fire" and observe the course of their missile. The simulator sometimes causes a "Nike" to malfunction or miss the target, just to keep the defenders from becoming overconfident. Furthermore, it automatically "keeps score" on their every move.

The compact, 5-ton air conditioning system in the trailer is said to be "almost as sophisticated as the electronic computer equipment that it bathes in carefully controlled air.

"It maintains comfortable conditions when the outside temperature drops to -65° F. by means of electric resistance heaters developing 30,000 B.t.u.h. A centrifugal atomizer, supplied from a 10-gal. water tank and controlled by a humidistat, can add moisture to the air at the rate of 5 lbs. per hour.

"On cooling cycle, the air conditioner will develop a full 5 tons of capacity when the outside air temperature hits 120°. Under these extreme conditions, it will keep the interior at 80° dry bulb and 50% relative humidity. The refrigerating compressor runs continuously, but maintains temperature control by unloading first one, then both cylinders as interior thermostat settings are satisfied.

"The unit distributes 2,500 c.f.m. of filtered air, including 100 c.f.m. of outside air, through a perforated ceiling which gives low velocity circulation without drafts.

SERVICE SIMPLIFIED

"Service is simplified by access doors and removable panels. A series of switches permits each component of the air conditioning system to be tested independently of the others. Power for the air conditioning comes from the same 30 kw., 400 cycle, d.c. generator which supplies the 15-D-2 Missile Simulator."

The unit has been developed by Carrier's Transportation Dept., Machinery & Systems Div. Thirty units have been delivered.

Riviera Hotel's Third Expansion To Include Year-Round System

LOS ANGELES—The Riviera hotel in Las Vegas is having growing pains again—the third expansion of facilities since the desert resort was built, four years ago last April, it was reported here.

Now under construction is an addition, adjacent to existing shops and arcades, which will ultimately add 114 more rooms and suits to the present total of 294 guest rooms.

Now, as with the two previous expansions—the project includes complete year-round air conditioning. It will utilize Drayer-Hanson products—central-station air conditioners, single-zoned system, and low head-room, individual-room air conditioners.

The air handling phase of the project, set by Sun Supply Co., Las Vegas, was negotiated by Gordon Paxon, sales engineer, Air Conditioning Supply Co., Los Angeles, together with D-H Sales Manager Irv. Secord.

General Contractor is Taylor Construction Co.; Welton Beckett & Associates, FAIA, Los Angeles, is project engineer/architect.

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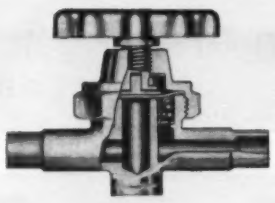

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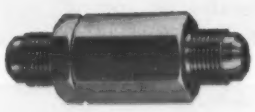

VALVES—Flow Check
Spring Loaded and Free Floating Types

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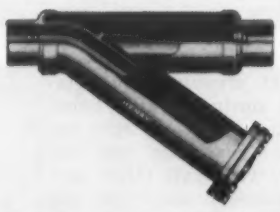
Sealed and Cartridge Types



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Alton Mfg. Adds 11,000 Sq. Ft. to Production Area

DALLAS—An additional 11,000 sq. ft. of floor area has been taken over by Alton Mfg. Co., to provide more capacity for production of its large packaged refrigeration units, according to B. P. Edelman, partner and general sales manager.

The new space is located directly across the street from the Camp St. factory where the company has been located since 1945.

Production of 30, 40, and 50-ton package units will be increased substantially by the release of space in the original plant as well as the plant at 1112 Ross Ave., it was stated.

All manufacturing, office, and engineering facilities are concentrated in Dallas where the company began business on Oct. 1, 1945. During the 14 years of its business life the factory has been enlarged on four occasions.

The present line of products includes refrigeration package units in capacities from 15 through 50 tons, and the Alton air-washer evaporative cooler for industrial and commercial installations in capacities from 4,000 through 12,000 c.f.m.

B. P. Edelman and A. W. Thornton, principals of the company, announced that they will exhibit a complete self-contained 50-ton refrigeration package unit in their booth at the Second Southwest Air Conditioning Show to be held Feb. 1-4, 1960, in Dallas.

This unit has the evaporative condenser built-in, making its over-all size 16 ft. long, 8 ft. high, and 5 ft. wide, with total weight 12,500 lbs.

Visitors to Dallas will be invited to visit the factory while in the convention city, it was noted.

Emerson Electric Appoints Weaver

ST. LOUIS—Floyd C. Weaver has been appointed small open motor sales supervisor, a newly-created position in the Motor Sales Div. of Emerson Electric Mfg. Co., it was announced by Richard P. Lindgren, motor sales manager.

Weaver, formerly district sales manager in the company's Chicago office, has an extensive company background of 25 years' experience in motor application and customer service.

Lindgren said creation of the new position "is in keeping with the company's ever-expanding efforts to meet the growing requirements of the small open motor field."

Catalog Covers Pillow Block Bearings, Mountings

OSHKOSH, Wis.—Detailed information on pillow block bearings and mountings, their applications, variations, lubrication and installation, is provided in the new 40-page catalog (No. 51-59) of Triangle Mfg. Co., 700 Division St., here.

Region III ASHRAE Members Tour Baltimore Aircoil Plant

BALTIMORE — Demonstrations of the company's coil bending and testing, forming of cooling tower wet-deck surface, and inspection of a new 500-ton press were among highlights of a plant tour conducted by Baltimore Aircoil Co., Inc., when it held open house for a meeting of Region III of the American Society of Heating, Refrigerating & Air-Conditioning Engineers.

Region III includes Pennsylvania, New Jersey, Delaware, Virginia, West Virginia, and Maryland. About 150 ASHRAE members attended the event, including many engineers from throughout the U. S., according to the announcement.

Following registration at the plant, the visitors were given the hour-long guided tour of manufacturing facilities. Among the guests were Arthur Hess, president of ASHRAE who was accompanied by Mrs. Hess; D. D. Wile, first vice president of ASHRAE; and Cecil Boling, past president of ASHRAE.

Throughout the tour, overhead cranes were in operation and all material flow continued on routine schedule. After the tour, cocktails were served in the shipping area where visitors were invited to inspect completed units.

A banquet at nearby Friendship International Airport followed the open house. Introduced by Yeardley Smith, president of ASHRAE's Baltimore Chapter, the banquet speakers were Hess, who discussed meaning of the word "engineer," and Robert Dietrich, who spoke on Baltimore city building inspection.

WILFRED WHERLEY, B.A.C. design engineer, guides one of the many groups through the plant. Shown in the foreground are ASHRAE's president Arthur Hess and Mrs. Hess; William Kruger, first vice president of Baltimore Chapter; D. D. Wile, first vice president of ASHRAE, and Cecil Boling, past president of ASHRAE.

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Water Regulating Valves For Cooling Equipment (3)

In this series of articles, R. H. Luscombe, Penn Controls, Inc., reviews the basic principles and applications of water regulating valves used on water-cooled refrigeration equipment. Luscombe touches on valve construction, application products, and service.

Parts One and Two appeared in the Nov. 2 and Nov. 16 issues, respectively. This is the third and concluding instalment in the series.

By R. H. Luscombe, Penn Controls, Inc., Goshen, Ind.

OPERATION AND SERVICE

Probably the most serious problem in connection with water valve operation is its failure to close off. In the case of three-way valves, this is not too significant, but with waste water valves the problem can become critical.

Ninety per cent of closing problems are due to installation dirt and sediment. See Fig. 5. Disturbing old pipe scale, dirt in new piping, soldering—all these contribute to this problem. Here the installer can take a lesson from the plumber who flushes out his newly installed or repaired lines with all valves full open for several minutes.

In the case of the water regulating valve, it can be mechanically forced open while the flushing takes place, and this technique is applicable when dirt becomes a problem sometime after installation. Where flushing doesn't solve the problem, valves can be partially disassembled, while still in the line, and seats and discs may be cleaned manually or replaced as needed.

Service life of water regulating valves depends in great part on the water being used. In some areas, valves fail in only a few months; in other areas they outlast the units on which they are mounted.

PROBLEM OF HEAD PRESSURE PULSATIONS

Another problem encountered in water valve applications is that of head pressure pulsations. While the sensing bellows can logically be connected anywhere on the high side of the system, it is most usual for the connecting capillary to be attached at the head of the compressor. Pulsations at this location are more severe than at downstream connections in the high side and can cause erratic water valve operation.

This problem is somewhat solved by use of a capillary, rather than a larger tube to the bellows, but then another problem is encountered:

On every operation of the compressor, there is migration of some refrigerant vapor and oil through the capillary into the bellows and cup of the water valve. When the unit shut down, this oil and refrigerant has to migrate in the reverse direction. On some occasions, sediment in the capillary can act as a check valve, allowing flow of the gas and oil in one direction, but not the other.

Also, some high speed small displacement compressors having a low magnitude of pulsation may not drive the valve open rapidly enough on an initial start to keep up with the sudden rise in head pressure. As a result, the capillaries on water valves used on some 2 and 3-ton air conditioning units have a larger bore (0.062 in. instead of 0.028) to allow the water valve to follow head pressure changes more rapidly.

This reduces the dampening action of the capillary, making it entirely unsuitable for machines with high magnitude pulsations which is one reason why many water valve applications to specific units must be custom engineered.

HAS LIMITED LIFE

It must be remembered that any pressure responsive element has a limited life depending on such factors as the number of pulsations, the speed, and the physical amount of bellows flexing. Resonant conditions, where the sensing element vibrates in unison with the vibration originator, can shorten the life of the element drastically. There have been extreme cases where vibration resonance accounted for bellows failure in a few hours.

CAPILLARY BREAKAGE IN THE FIELD

Capillary breakage in the field is a problem everyone experiences. It is due to "work hardening" of the copper as it vibrates. This vibration problem is the type which must be field corrected, since many variables, like mounting, bracing, bracketing of the unit can affect vibration of the capillary.

While the "perfect" water valve will never be made, the present ones are quite satisfactory for the purpose. It must be remembered that anything working in water will need occasional service, and a water regulating valve is no exception to this rule.

* * *

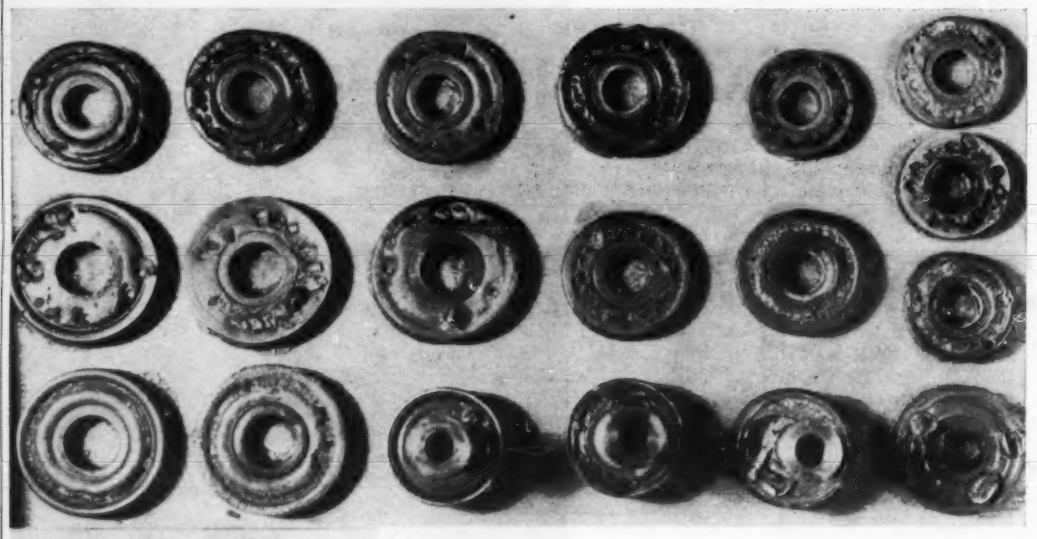

FIG 5—"So your water valve won't close?" Unretouched photographs of pipe cuttings, solder balls, rocks, etc. that are found on the valve seats of valves returned as "defective." Most returned valves are returned because water lines were not flushed adequately to prevent such closing difficulties.

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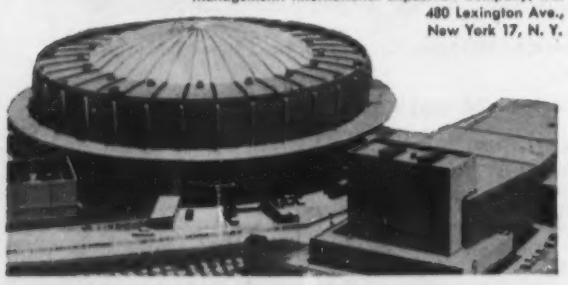

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Vast Refrigeration Market Seen In Growth Of Frozen Foods, Need for Lower Temperatures

ATLANTIC CITY, N. J.— Continued growth in popularity of frozen foods plus the need for improved transportation and retail display and storage facilities would indicate a vast market for the refrigeration industry.

This would be a safe conclusion to draw from remarks of Harold J. Humphrey of General Foods Corp. and president, National Association of Frozen Packers, in a talk at the special conference session held by Air-Conditioning & Refrigeration Institute during ARI's 11th exposition for the industry here.

Few Refrigerated Trucks Can Maintain 0° F.

Only a relatively small percentage of the 34,000 refrigerated trucks can maintain the 0° F. temperature agreed upon as necessary to hold frozen foods at their prime quality, according to Humphrey.

Perhaps a third of the retail stores display frozen foods above the "frost line" in cabinets, and a third have no backroom storage facilities while many of those with such facilities don't keep them at low enough temperatures, he also pointed out.

Predicts Future Growth Of Frozen Foods

Predicting the future growth of frozen foods, Humphrey listed:

"Specifically, citrus juice concentrates and vegetables will continue their upward rise.

"In the immediate future, prepared foods will be the 'spectaculars' of the industry. Production forecasts comparing 1959 with 1958 have already been made. Frozen platters will be up 35% over 1958; entrees 28%; fruit pies 25%; bakery products and nationality foods up about 20%.

"Generally, it is accepted that prepared products will increase 20% to 25% this year over 1958," Humphrey said.

"Another interesting development is occurring in the meat industry," he continued. "For the most part, packers have the animals shipped over long distances to central slaughtering areas and then distributed from those points.

Meat Packers Will Require More Cooling

"Now, meat packers are moving their slaughtering operations closer to the areas of production, preparing meats in packaged form, and distributing from these preparation points. This will mean the use of low temperatures to a much larger extent in this industry," Humphrey indicated. "This, of course, complies with the increasing demand from retail stores for pre-cut and prepackaged meats.

"In the next three to four years, total frozen food production should be between 8½ and 9 billion pounds, an increase of 1½ to 2 billion pounds," he said.

"From the foregoing projections, I think you can see the pressing need for adequate refrigeration," Humphrey emphasized.

'32° F. Is Not Cold Enough'

"Now what are the implications of this tremendous increase in the volume and variety of frozen foods? Obviously, it means there must be some standards for their handling. And when we in the industry talk about handling frozen foods, we mean handling at 0°. Too many people think that because a food package may be cold, hard, and 32° F., it passes muster as a properly controlled frozen food. This is not so," Humphrey said.

"The quality of frozen foods suffers when exposed to elevated temperatures for varied periods of time. True enough, there are variations in characteristics among the hundreds of foods frozen. But the loss of quality at temperatures above zero varies with the product.

"Let me explain. Almost all frozen foods require 0° to maintain quality. However, there are a very few which do not lose quality when exposed to higher temperatures for reasonably short periods of time.

"Nevertheless, it was apparent early in the game that for distribution purposes, 0° was the best temperature to use for all products. It would not be feasible to distribute at several different temperatures.

Prepared Foods Cause More Critical Problems

"And the picture is becoming even more complicated with the increase in the sale of prepared foods. Here new and more critical problems are created because of different items in one package," Humphrey pointed out.

"A great deal of research has been done on the subject of temperatures as they affect the quality of foods. Most important has been the excellent work started in 1948 and continued since at the Albany California Laboratories of The United States Department of Agriculture.

Time Temperature Tolerance Test Results

"This project is known as the Time-Temperature Tolerance of Frozen Foods. Its purpose was to develop comprehensive information on the effects of temperature hazards on color, flavor, vitamin content and other quality factors of frozen foods. The results of this work have been published in a series of technical papers now totalling 19.

"After publication of these studies, another major development took place in the industry. An all-industry task force was formed whose aim was the encouragement of maintaining proper temperatures throughout the distribution cycle—from the processor to the retailer.

"The National Association of Frozen Food Packers spearheaded this movement. Representatives from government, railroads, truckers, distributors, retail grocers, food chains, warehouses, the Florida Citrus Commission, and the National Fisheries Institute among others, are all part of the all-industry task force.

"This group meets twice a year to discuss primarily what each segment of the industry has done in its area to improve the handling of frozen foods. That they have accomplished a good deal in a very short time is attested to by the National Association of Frozen Food Packers' publication of a list of more than 50 educational booklets and other material—almost all published since 1957. Incidentally, our association serves as the clearing house for all this material," Humphrey explained.

"A little over three years ago, another important development took place in the frozen food industry. It was a development which again spoke for the good spirit of cooperation among all segments of the industry.

"It was evident to regulatory officials as well as many people in all phases of the industry that standardization of frozen food handling was necessary and inevitable. Very wisely, responsible government officials realized the complexity of the problems involved and the specialized knowledge needed to provide sound and reasonable direction for all in the industry.

"In May, 1956, the Association of Food and Drug Officials of the United States invited the National Association of Frozen Food Packers to work with them on the development of a uniform code covering not only the maintenance of temperature, but standards of sanitation, performance, and quality. The aim was, of course, to do the job which needed doing and to do it in a way that would be fair to all.

"Now, on the whole, I think products at the processors' plants are maintained to insure the best quality. But processors lose control of the product when it leaves their plants, for in almost all cases frozen foods are transported in equipment not owned by processors," Humphrey said.

"I believe our transportation companies do a good job in moving frozen foods. But look at it this way: a truck or railroad car loaded at the processor's plant is only the beginning of the distribution pattern. The products can move into another more locally situated warehouse and then even to a customer's own storage area before being transported to the store.

"What I am saying is that the more movement from place to place, the greater chance for temperature variations and most likely elevated temperatures will result," he emphasized.

"Where are we now as far as frozen foods are concerned?

"The United States Department of Agriculture's biennial warehouse census, last compiled in 1957, showed there were about 333 million cu. ft. gross in zero-and-below storage space. Ten years earlier only 145 million cu. ft. existed.

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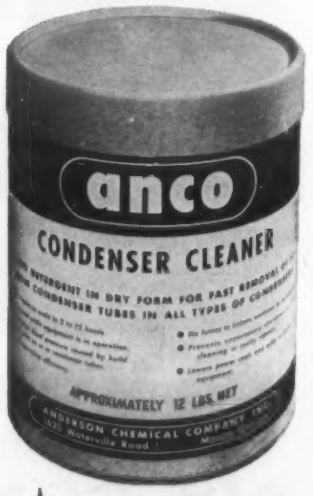

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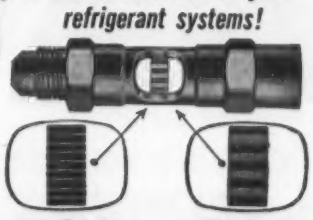

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IT'S GOOD

The MOISTURE-REACTOR is composed of alternate, permanent and changing (Reactor) color bars. When all the bars appear the same color (green)—it's good—there's no moisture in system.

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If moisture enters the system, every other color bar changes from green to yellow—then it's bad—the dehydrator should be replaced. When the system is moisture-free again, the Reactor color bars will change back to their original solid green color.

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were only three mechanically refrigerated freight cars in operation. Ten years later, that is in 1958, there were about 2,400 mechanically refrigerated cars in service, and 1,400 on order—all of which are capable of maintaining 0° F.

"There are more than 34,000 refrigerated trucks which now carry frozen foods throughout the country.

"Home refrigerators are built with freezer compartments as a matter of course today. In fact, you would find it difficult to buy a refrigerator without a freezer compartment. During the first eight months of 1959, sales of domestic refrigerators were 2,551,000.

Over a Million Home Freezers Bought In 1958

"Separate home freezers have joined the ranks of universal major appliances. Over a million were bought in 1958 and the first eight months of this year the figure is 886,000. According to government figures, there are about 11,500,000 home freezers in use and 4,500,000 commercial freezer lockers used largely by individual consumers.

Freezer Cabinets Being Installed at Greater Rate

"Freezer cabinets are being installed at a greater rate than ever before. The average installation for Super Market Institute members shows that in the past five years the lineal feet per store has doubled. In 1954, the average installation of freezer cabinet was 55 lin. ft.; in 1958 it was 100 lin. ft. And this is for frozen food use only and exclusive of ice cream.

"It was also reported that in 1958 new stores with up to 10,000 sq. ft. of selling area installed an average of 61 lin. ft. of frozen food cabinets; those with a selling area of 10,000 to 15,000 sq. ft. of selling area installed an average of 96 lin. ft. of frozen food cabinets and those with over 15,000 sq. ft. installed 130 lin. ft.

"According to an article in the *Progressive Grocer,* a new small store, or a rebuilt one, may not have a fresh meat cabinet but will have a frozen food cabinet.

"Earlier I mentioned that there were about 34,000 refrigerated trucks which now carry frozen foods throughout the country.

Some statistics provided by the U. S. Department of Agriculture reveal some of the problems in this area of the distribution cycle. Of these trucks, about 5,000 can hold 0° F.; 15,000 hold up to 10°; 10,500 with an average up to 18°; and 3,500 delivery trucks that have temperatures up to 25° or higher.

"You can see from these few figures that holding 0° presents problems in the movement of goods by trucks," Humphrey declared.

"Admittedly, it would be a very difficult task to have these trucks which do not hold 0° reworked overnight so that they will maintain 0° temperatures. But, beside the proposed uniform code and the emphasis on the maintenance of proper temperatures, something will have to be done. Better equipment and more refrigeration is needed.

Way To Improve Present Refrigerated Trucks

"There are some things which, if observed by those in the transportation industry, would help to improve present equipment without the expenditure of large sums of money.

"For example, refrigerated trucks have drain holes which carry off liquid to clean out the interior. In many instances, the plugs for the holes are either lost, strayed, or stolen. When a truck is running along at 50 m.p.h. or better with an outside temperature of 70°, the inside temperature of the truck cannot help but be elevated.

"Sloppy seals or poorly welded seams drive air into the truck body like a blast when the trucks are moving at high speeds," Humphrey pointed out.

"Floor racks and side racks which allow circulation around the frozen food shipment are necessary if proper temperatures are to be maintained. The absence of racks will prevent circulation of air around the goods and elevated temperatures cannot help but result.

"But transportation is not the end of the problem. For when the products arrive at the store, another set of conditions are at hand. Here we are faced with both the problems of adequate backroom storage and proper temperatures in freezer display cabinets.

"In a survey made by the Association of Food and Drug officials during the first four months of 1958, 6,999 display cabinets were checked in 3,063 stores in 34 states and the District of Columbia. This is an average of two-and-a-half cabinets per store. Some of the figures were quite revealing.

One Third of Stores Had No Back-room Storage

"For example, about one-third of the stores had no backroom storage facilities; in the remaining two-thirds which had backroom facilities, only about half maintained temperatures from -5° to 0°; about 21% had temperatures from 1° to 5°; and the balance 6° to 26° or higher.

"In checking display cases, packages were above the frost line in 32% of the stores checked with about two-thirds storing their frozen foods properly.

"From the foregoing figures, I believe you can see the need for adequate backroom storage and for education on proper storage in display cabinets."

Now Representing...

Temco, Inc. — Distribution of Temco gas heating equipment in a 48-county area has been acquired by BLUEFIELD SUPPLY CO. with operations in Huntington and Bluefield, W. Va. Temco equipment was formerly distributed in the Huntington-Charleston market by Tri-State Appliance Co., which is liquidating its business. The Temco Div. of Bluefield Supply will be headed by George Glazier who was in charge of Temco sales at Tri-State.

Wabash Corp. — WM. J. McKEOUGH of Hartford, Conn. has been appointed new representative covering New England, metropolitan New York City, and northern New Jersey.

Elgen Mfg. Corp. — Appointment of W. B. FORREST CO., Detroit, as manufacturer's representative for the full line of metal and fabric products has been announced.

Gibson Refrigerator Co., Div. of Hupp Corp.—FALLS CITY SUPPLY CO., Louisville, Ky., has been appointed distributor. CERULLO ELECTRIC SUPPLY CO., INC. has been named distributor in 19 counties in the Hazelton, Pa. marketing area.

Pittsburgh Corning Corp.—RICHARD E. WOLFF has been appointed sales representative attached to the Philadelphia office. He was previously associated with U. S. Gypsum Co.

Carrier Corp. — J. D. WILSON CO., INC. of Milwaukee has been franchised as a distributor in three additional trading areas in Wisconsin, centering around Madison, Stevens Point, and Wausau. The firm has represented Carrier in a large trading area of the state since June, 1958.

McQuay, Inc.—A. R. BOWMAN CO., Rochester, N. Y., has been appointed a heating and air conditioning sales representative for that territory.

The Payne Co. — Addition of JAMES G. CALLAWAY, JR. as manufacturer's representative in Missouri, Kansas, and Nebraska has been announced.

Crane Co.—N. W. AYER & SON has been appointed advertising agency for Crane, effective Jan. 5. The company said advertising will play a more vital role in the support of Crane wholesalers and contractor-dealers than in the past.

General Air Conditioning Corp.—HAL STEBBINS, INC. has been named to direct all advertising, effective Jan. 1.

S. S. Fretz, Jr., Inc. (Philadelphia — SEBERHAGEN, NEVIN, GRUVER, INC. has been appointed to direct advertising, sales promotion, and public relations for this air conditioning and appliance distributor.

Airtemp Div., Chrysler Corp.—DAVISON ASSOCIATES, INC., Toledo, anounced its appointment as a distributor of Airtemp's packaged heating-cooling products and applied machinery and systems for multi-story buildings. Territory includes 14 counties in northwestern Ohio and southern Michigan.

American Air Filter Co., Inc.—LANDAU ASSOCIATES, Middletown, Conn., has been named New England manufacturer's agent for the "Electro-Klean" electronic home air filter.

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New Krack Reflex Design
CUTS COLD AIR LOSS

Krack reflex-designed product coolers direct the cold air against the *back wall* of the refrigerator from where it is reflected and distributed uniformly to all areas within the cabinet. Loss of refrigerated air due to frequent opening of doors is thereby greatly reduced. You can store *more* food, because ceiling-mounted

KRACK REACH-IN PRODUCT COOLERS occupy much less space. Smartly styled embossed aluminum housing • Six models from 110 to 8600 BTU/Hr. • Electro tin plated copper tubes • Permanently lubricated motor with overload protection • "Knock-outs" for ceiling or back wall installation.

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NHAW Opposes 5-Year Warranty--

(Concluded from Page 1, Col. 4)

association's opinion in this matter."

Numerous and varied reasons for this decision were given in the full text of the resolution.

In presenting the proposed resolution before the association, committee chairman R. W. Allen of Winston-Salem, N. C., declared that a survey of 23 manufacturers revealed that 74% were against the five-year warranty and that 56½% said a one-year warranty or less would be satisfactory.

A survey of 178 dealer-contractors in 33 states, Allen also disclosed, showed 87½% saying the five-year warranty was not profitable, 78½% saying it wasn't necessary, and 88½% saying the one-year warranty would be satisfactory.

Included in the code of ethics for wholesalers are such recommendations as: maintaining "an aggresive and sound sales program," giving "full and complete support to the manufacturers' need for complete and efficient distriibution," extending equal price treatment "to all competing customers for like quantity and quality," having "a clearly defined credit policy to avoid confusion and misunderstanding," maintaining " a complete inventory," carrying on a continuing program of education for salesmen, providing "promotional activity allowance on a proportionately equal basis," adhering "to the manufacturers' policy in regard to returned defective merchandise or merchandise in warranty," and recommending that "all wholesalers prepare a written statement regarding their policy on such items as to whom they sell, from whom they will buy, prices, terms of sales, freight and advertising allowances, returned goods, defective materials, etc."

Each of those recommendations is spelled out in greater detail in the text of this resolution.

In addition to the business session, luncheons, banquet, and conferences between manufacturers and wholesalers, the NHAW convention program included two "workshop panels"—one on electric heating, the other on management problems.

Heading up the new officers of the association as president is Harold W. Squire of Tiffin, Ohio. J. Orville Garrett of Greensboro, N. C., is president-elect; R. B. Hesling of Van Nuys, Calif., vice president; D. M. Brousson of Vancouver, B. C., Can., secretary; and Robert Swart of Grand Rapids, Mich., treasurer. W. R. "Wib" Bull continues as executive director.

On the board of trustees are George Sprick of New Haven, Conn., Fred C. Baumbach of Rochester, N. Y., C. Blaine Lytle of Detroit, Eugene A. Brown of Charlotte, N. C., Joseph M. David of Sullivan, Ill., William H. Brauer of St. Louis, Vince G. Shields of Birmingham, Ala., L. E. Minns of Houston, Malcolm B. Nicholson of Denver, Emery O. Lillard of Walnut Creek, Calif., B. H. Browning of Hamilton, Ont., Can., and Don M. Keefer of Portland, Ore.

Texts of the NHAW resolutions on the five-year warranty and code of ethics for wholesales are at right.

Kramer--

(Concluded from Page 1, Col. 2)

Kramer was also the author of numerous short stories, sketches, and essays, wrote book reviews for *The Trenton Sunday Times-Advertiser*. He was active in civic affairs, and the relocation of refugees to this country.

Survivors include a son, Harold; a daughter; two brothers; and two sisters.

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Texts of NHAW Resolutions

5-Year Warranty on Air Conditioning Equipment

Whereas it is common policy for manufacturers of air conditioning equipment to supply a five-year warranty against manufacturing defects on such equipment, and

Whereas the charge for this warranty is either included in the product price or as a mandatory extra, and

Whereas this warranty was designed to offer to the end user of equipment protection against manufacturing defects for a five-year period, and to build the customer's confidence in such products, and

Whereas investigation of various manufacturers' warranties has proven that these warranties lack consistent description as to their coverage, and

Whereas this has caused confusion and misunderstanding on the part of the customer as to what coverage is provided by the warranty, and

Whereas the customer pays for this warranty whether or not he understands the scope of its coverage, and

Whereas because of these facts the five-year warranty has failed to accomplish its original purpose of creating customer confidence in the product and satisfaction with its use, and

Whereas the five-year warranty also has been detrimental to the wholesaler and his dealer-contractor customers because:

(1) It offers no incentive to carry adequate service parts inventories;

(2) It is costly to administer, and therefore these costs must be passed on to the end user;

(3) It has been conducive to improper application and sloppy installation

(4) It has restricted the opportunity to sell preventive maintenance contracts to customers, to promote setting up service reserves or to promote the sale of service insurance warranties to end users;

(6) It has led to loss of profit on service labor and misunderstanding on the part of some dealer-contractors in charging back labor allowance;

(7) It has increased the cost of equipment without accomplishing the desired results;

Therefore be it resolved that we as wholesalers and members of NHAW advocate that the air conditioning manufacturers discontinue the five-year warranty as it is now constituted and substitute a standard one-year warranty from the date of installation against manufacturing defects in air conditioning products, and that the staff of this association be directed to contact these manufacturers to inform them of this association's opinion in this matter.

Recommended Code of Ethics

This Recommended Code of Ethics has been inspired by the desire to establish sound, uniform business policies between ourselves and our suppliers and our customers.

Since it is impractical to enumerate in detail all desirable practices and functions, this code has been drawn up as a general guide, designed to enhance the position of the wholesaler in the heating, air conditioning, and refrigeration industry, to the end that he will perform all proper functions of the wholesaler, thereby better serve his supplier and customer. This, in turn, will bring about a general upgrading of the industry and better serve the consuming public.

SALES: We believe that the consumer is best served by the efficient and traditional method of distribution from the manufacturer to the wholesaler to the dealer-installer to the consumer. We firmly believe that in order for the consumer to secure a truly healthful, efficient comfort system, there should be no by-passing of the wholesaler or of the installing dealer.

SALES ORGANIZATION: The wholesaler should maintain an aggressive and sound sales program to promote the increased sale of all products carried. This calls for well informed salesmen operating under some type of a sales educational program at all times. He should know his products, sales policies of the company he works for, and the policies of his company's suppliers.

DISTRIBUTION: The wholesaler should give full and complete support to the manufacturers' need for complete and efficient distribution in the territory he represents. In order to provide proper distribution he shall use seasonal and other sales promotion sales programs, special sales promotion window display material, point of sale identification aides, as well as furnishing this type of material to his dealers. He shall sell to, and not in competition with, legitimate dealer-installers. He should give complete support to those manufacturers who adhere to the distribution method of the manufacturer to the wholesaler to the installing dealer, and who recognizes the functional cost of the wholesaler in their distribution policy.

PRICE POLICY: In keeping with the Trade Practice Rules of the industry, equal treatment shall be extended to all competing customers for like quantity and quality. The wholesaler shall never resort to the practice of casting price bait to the manufacturer or his representative by inference or by outright deception to obtain special prices. He shall maintain and publish, if deemed desirable, a consistant price policy in keeping at all times, with the Trade Practice Rules.

CREDIT POLICY: Have a clearly defined credit policy to avoid confusion and misunderstanding. Credit is a convenience to business and not a sales tool. Cooperate fully with local credit exchange organizations through an efficient credit department. Offer and enforce all terms consistently. Promiscuous handling of credit detracts from promotion and sales effort and puts emphasis on manipulation.

PROPER INVENTORY: A complete inventory should be maintained consistent with confidence in one's supplier. Needs should be properly anticipated and drop shipments kept to a minimum. Small uneconomical orders should be eliminated.

EDUCATION: A continuing program of education should be carried on for salesmen at all times and a continuing program for the installing dealer, also. Without proper knowledge and sales know-how, the manufacturer, wholesaler, or dealer-contractor can never realize their rightful share of the market and the consumer, in most instances, would not have been properly served. Where engineering, lay-out help, and other assistance is needed, by the dealer, this should be furnished by the wholesaler.

PROMOTIONAL ACTIVITY: Provide promotional activity allowance on a proportionately equal basis. Use literature and advertising material intelligently, taking into consideration the cost of such items to the manufacturer who furnishes them.

RETURN GOODS: Adhere to the manufacturers' policy in regard to returned defective merchandise or merchandise in warranty. Have a definite policy on returned goods to installing dealers, and follow it to the letter.

STATEMENT OF POLICY: It is recommended that all wholesalers prepare a written statement regarding their policy on such items as to whom they sell, from whom they will buy, prices, terms of sales, freight and advertising allowances, returned goods, defective materials, etc. We believe that a specific written Statement of Policy on the part of the wholesalers, will bring about a general upgrading of the industry, establish confidence in the funcion they perform, and have a stablizing effect for the over-all good of the trade.

We believe that the future prosperity and welfare of the people throughout North America depends upon the increased efficiency in the manufacture and distribution of useful goods and services, and that the wholesaler performs a vitally essential function in the public interest.

Bendix-Westinghouse Lauds Wholesalers

ATLANTIC CITY, N. J.—Bendix-Westinghouse Automotive Air Brake Co., Evansville Div., entertained its authorized wholesalers at a cocktail hour and dinner in the Madison hotel during the ARI Exposition held here.

Appreciation of the outstanding sales achievements by the wholesalers was voiced by Frank A. Haag, general manager; Donald J. Wood, general sales manager; and John W. Downen, manager of service and wholesaler accounts.

Willard B. Paine, president of Bendix-Westinghouse, was unable to attend the dinner due to a South American trip but recorded a message on tape for the meeting.

Speaking for the wholesalers were Ernest Younis, Air Cold Sales, Inc., Los Angeles; E. L. Tramposh, Refrigeration Equipment Co., Kansas City, Mo.; and R. D. Marshall, R. D. Marshall & Co., Inc., Albany, N. Y.

Minick Is Coolerator Industrial Designer

ALBION, Mich.—As part of the expanded program in the strengthening of the Coolerator organization, M. F. Beisber, president, Coolerator Div., McGraw-Edison Co., announced the appointment of Harold Minick as the division's product stylist and industrial designer.

Minick comes to Coolerator from a prominent Detroit industrial designing firm. He has specialized in major appliance design and has had experience with a large appliance manufacturer as well as general industrial design.

Owens Heads New Company

PHOENIX, Ariz. — Lloyd Owens is president of the new Delta Heating & Cooling, Inc., 709 N. 15th Ave. here, it has been announced.

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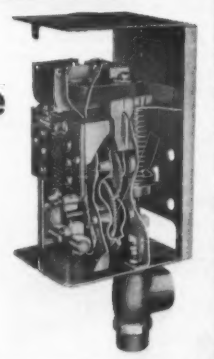

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NWAHACA Votes Silver Shield Funds--

(Concluded from Page 1, Col. 5)

could be lively though it may create problems for air pollution engineers.)

Some Behind-the-Scenes Activities Revised

Changes in some behind-the-scenes activities of the association were disclosed at the opening business session. The Research Advisory Council, for example, is being reorganized and will include a new standing committee to look into new products and materials, West Coast weather conditions, etc., according to Keith T. Davis, chairman.

Extensive revision of the popular NWAHACA manuals is under way, too, with the general aim being to group all related material now scattered through the various manuals "in one place under one heading," as Clarence Grandstaff expressed it.

Reporting on the Marketing Council, Robert V. Main, chairman, declared that "we now have the tools to rebuild the industry town by town," referring primarily to the Silver Shield program, which is now actively operating in seven cities while five more local bureaus are winding up their 12-week training sessions prior to kick-off time.

What has been developed, Main emphasized, is a "do-it-yourself" marketing program intended to improve the industry sales picture over the long range.

Three talks on electric heat were presented in general sessions. E. O. George, vice president, Detroit Edison Co., outlined some utility thinking; John Norris, president, Lennox Industries, and Don Winegardner, vice president, Majestic Co., presented some industry thoughts.

Noting that "in the past I believe our industry and yours may have been at odds in our promotional efforts because of the mistaken impression that it was not to our mutual advantage to work together," George called for greater cooperation and communication between electric utilities and the warm air heating industry.

"I want to emphasize that the electric utility industry stands ready to support any and all kinds of electric heating applications that will give our customers value received for their electric dollar, whether the installation is resistance room heating, the heat pump, or some other method of central home heating and cooling," George declared.

"We don't care what the system is—just so it does the job and just so it's electric," he explained. "We are interested in selling the idea of electric heating—not the method—any more than you want to fight the battle of fuels."

Norris Urges Development Of Electric Heating

Although he later expressed some criticism of utility promotion methods and present electric heat systems, Norris startled some listeners when he teed off with the statement: "It's high time we in this industry get off our ashcans and develop equipment for electric heating."

Emphasizing that air movement is essential for a comfort-producing heating system, Norris thinks the industry should produce two types of electric units: (1) heating elements for location in individual room registers, and (2) electric furnaces for central location.

A central electric heating system, Norris claims, would provide "greater safety, greater comfort, greater cleanliness, and perhaps lower costs."

Main theme and title of Winegardner's talk was "there's no mystery in electric warm air heating."

"There is absolutely no need to feel that our present National Warm Air manuals do not apply to electric heating," Winegardner said.

Heat gains and heat losses of a residence using an all-electric system should be calculated by using the manuals as for other fuel systems, he explained.

Duct system calculations should also be made according to the manuals, Winegardner said, taking into consideration the fact that reduced heat losses or gains in each room—resulting from increased insulation—will probably mean smaller registers or diffusers.

The electric furnace manufacturer, he explained, will have the responsibility of providing a blower with sufficient static pressure capacity to meet the changed requirements of delivering less heat or cooling through long ducts.

Heat Pump Costs Compared

In another technical talk, Walter R. Yeary, application engineering supervisor for General Electric Co., compared operating and owning cost considerations of heat pumps for identical residences located in Jackson, Miss., and Columbus, Ohio.

For both houses, Yeary's calculations indicated, the 4-ton heat pump would be less expensive to own and operate over a long-term period than a 3-ton unit.

Contractors were cautioned, therefore, not to jump to immediate conclusions in calculating the size of heat pump that will best meet the requirements of a particular application.

Trends in technical developments were reviewed by H. T. Gilkey, director of technical services for NWAHACA, who called attention to such things as catalytic combustion, thermionic conversion, humidity control in year-round air conditioning, electric air cleaning, etc.

Discussion of the new quick but accurate method for calculating loads and preparing bids was presented by Gary Baker, assistant technical director for the association.

Designated as Worksheet Form H1, and available in pads, the form provides space and instructions for heat losses and gains (using built-in factors to simplify calculations) and permits detailed cost estimates to be readily tabulated.

At the same session William L. Dulle of E. E. Souther Iron Co. discussed costing methods and J. P. Field of the Williamson Co. touched on sales presentations.

Concurrent sessions were staged one afternoon, one designed for manufacturers and wholesalers, the other for dealer-contractors.

General topic of the latter session was "How to Obtain Competent Sales Personnel," and it featured Newt T. Hess of Vorys Brothers, Inc., Ray F. Horan of Janitrol, and W. E. Bogen and John Hensel of Bogen, Inc.

Four talks were presented at the manufacturer-wholesaler session.

'Murky' 1960 Likely Says Housing Authority

A 10% drop next year in residential construction was forecast by George C. Smith of F. W. Dodge Corp., who warned that the possibility of labor problems in steel, copper, and transporation makes the outlook for 1960 "murky."

"Some readjustment in the boom" is possible in 1961 or 1962, but after 1963 "the 'soaring sixties' should really start to soar," Smith predicted.

That expected boom, however, will be an era of "tough competition and knotty problems of providing enough schools, housing, and jobs" for the exploding population, he cautioned.

Continued firmness or a possible rise in interest rates was seen by Carl T. Arlt of the St. Louis Federal Reserve Bank.

"The Federal Reserve Bank wants to encourage growth, but a sustained growth," Arlt said. "We want to encourage stability and discourage both inflation and deflation."

According to Arlt, "credit wants are unlimited, but credit availability is limited." As a result, assuming continued growth of markets as now anticipated and growing needs of governmental services, "you'll be hearing more and more about high interest rates," he predicted.

Tax problems, specifically the question of state taxation of interstate commerce, were discussed at this session by Curtis C. Williams, Jr., legal counsel for NWAHACA.

Events that led to the adoption of federal legislation (Public Law 86-272) on Sept. 14, 1959, which attempts to restrict further expansion of state taxing powers as to interstate income, and some opinions as to the present and future status, were offered by Williams.

Final speaker was Congressman William H. Ayers, a one-time heating contractor in Akron, Ohio, and prime mover of the Landrum-Griffin labor reform bill, who revealed some of the "inside dope" on the passage of the bill.

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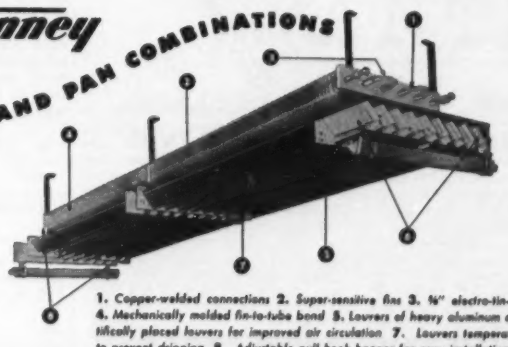
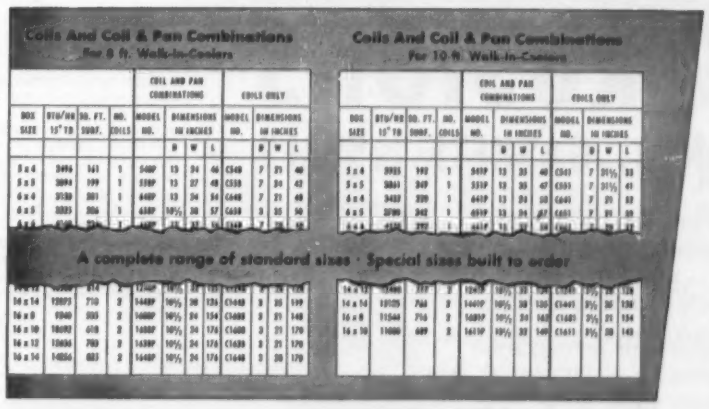


1. Copper-welded connections 2. Super-sensitive fins 3. ½" electro-tin-plated tubing 4. Mechanically molded fin-to-tube bond 5. Louvers of heavy aluminum alloy 6. Scientifically placed louvers for improved air circulation 7. Louvers temperature-equalized to prevent dripping 8. Adjustable pull hook hanger for easy installation and cleaning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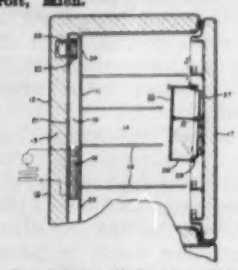
PATENTS

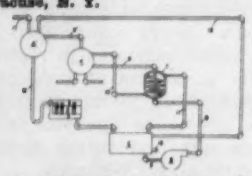
Week of July 14 (Concluded)

2,894,379. REFRIGERATING APPARATUS. Orson V. Saunders, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



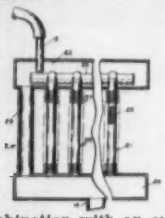
1. In combination, a refrigerator cabinet having walls defining a food storage chamber therein, a refrigerating system associated with said cabinet including an evaporator for cooling air within said chamber, a food storing hydrator structure within said cabinet exposed to the cool air in said chamber including a receptacle member. . . .

2,894,380. EVAPORATOR CONTROL FOR ABSORPTION REFRIGERATION SYSTEMS. Everett Perry Palmatier, Solvay N. Y., assignor to Carrier Corp., Syracuse, N. Y.



7. A device for regulating flow of liquid into an evaporator tube of a refrigeration system to be vaporized therein comprising a substantially cylindrical reservoir-defining member arranged to surround the top of an evaporator tube, liquid over-flowing from said reservoir into said evaporator tube, said member having at least one opening below the level of the top of the tube for the admission of liquid refrigerant. . . .

2,894,381. EVAPORATOR CONTROL FOR ABSORPTION REFRIGERATION SYSTEMS. Everett P. Palmatier, Solvay, N. Y., assignor to Carrier Corp., Syracuse, N. Y.



1. In combination with an evaporator including a plurality of substantially horizontally spaced tubes defining a passageway for the flow of refrigerant, means for supplying liquid refrigerant to the uppermost tube in relatively small quantities, means for vaporizing liquid refrigerant flowing in the lower portion of the evaporator and means providing a path of flow, for said vaporized refrigerant, which includes the space adjacent the liquid refrigerant supply means whereby the vapor flow acts to oppose the supply of liquid refrigerant to the evaporator.

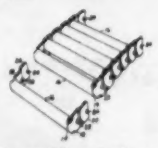
2,894,382. EVAPORATOR CONTROL FOR ABSORPTION REFRIGERATION SYSTEMS. Everett P. Palmatier, Solvay, N. Y., assignor to Carrier Corp., Syracuse, N. Y.

1. A feed control for an evaporator tube, said tube having a vertical evaporating portion and an angular portion extending upwardly therefrom, means disposed adjacent the juncture of the angular and vertical portions of the tube to supply liquid refrigerant thereto, and means regulating the supply of liquid refrigerant in response to the quantity of refrigerant in the vertical portion of the tube.

2,894,528. FLAPPER VALVE. Robert E. Sykes, Evanston, Ill., assignor to Bell & Gossett Co., Morton Grove, Ill.

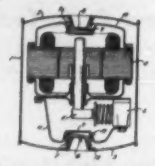
1. A non-lubricated, self-seating, positive-sealing flapper valve unit assembly comprising a cylindrical valve body having a flat face at the delivery end thereof with a plurality of circumferentially spaced passages extending endwise through the body, said body having a threaded external attachment surface engageable in a correspondingly threaded cylinder head member and terminating adjacent the inner end of said body in a beveled annuar surface for sealing, seating engagement with said member. . . .

2,894,681. CENTRIFUGAL BLOWER WHEEL STRUCTURE. Einar Lunde and William T. Nichols, La Crosse, Wis., assignors to The Trane Co., La Crosse, Wis.



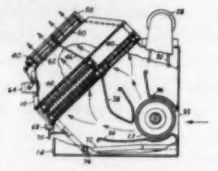
1. An assembly for incorporation in a centrifugal blower wheel comprising a plurality of blades, each of said blades having a vane portion and flanges extending from each end of the vane portion and lying in planes which are substantially at right angles to said vane portion, each of said flanges having a base portion and an outwardly offset end portion. . . .

2,894,678. VIBRATION REDUCING SUPPORTING ARRANGEMENT. Rudolf Hintze, Neuenhain, uber Bad Soden (Taunus), Germany, assignor to Stempel-Hermetik G.m.b.H., Frankfurt am Main, Germany.



1. Vibration reducing supporting arrangement for a compressor unit comprising, in combination, a motor-compressor unit including a rotary shaft and two supporting transverse end members having first abutment portions located opposite the ends of said shaft; a closed casing enveloping said motor-compressor unit and including two opposite end walls extending transverse to said shaft. . . .

2,894,728. MULTI-ZONE AIR CONDITIONING UNIT. James R. Davis, La Crosse, Wis., assignor to The Trane Co., La Crosse, Wis.



1. An air conditioning unit comprising a rectangular casing, one end of said casing having a longitudinal rectangular inlet opening extending substantially the entire length of said one end of said casing, a cross-flow fan wheel in said casing, means rotatably mounting said cross-flow fan wheel on said casing, said cross-flow fan wheel having its length greater than its diameter and being positioned adjacent the inlet opening in said one end of said casing and having its major axis extending substantially the entire length of the inlet opening. . . .

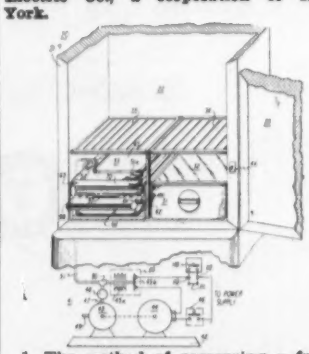
2,894,731. REFRIGERATING APPARATUS. Clifford H. Wurtz, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.

In a tube and fin type exchange device, a one piece sheet metal element having a plurality of integrally formed aligned finger-like projections extending away from one edge portion of said element and forming a plurality of parallel fins between which air may flow, said projections being arranged in side by side relationship and having refrigerant passage means formed directly in said projections, said one edge portion being foreshortened by having a plurality of corrugations formed therein with the sides of said corrugations arranged substantially in alignment with said projections.

2,894,778. MAGNETIC DOOR LATCH. Josef E. Lundholm, Lindingo, near Stockholm, Sweden. Application October 6, 1953, Serial No. 384,415.

A magnetic door latch for a door member mounted to close relatively to a door frame member, said latch comprising a permanent magnet adapted to be mounted on one of said members and including two projecting poles whose pole faces are coplanar, and a flattened armature adapted to be mounted on the other of said members in such a manner that when the door is in a closed position it is attracted by the two pole faces of the magnet. . . .

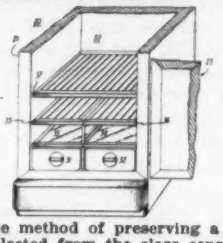
2,894,845. METHODS OF PRESERVING FRESH FOODS. Edgar S. Stoddard, Berwyn, Ill., assignor to General Electric Co., a corporation of New York.



1. The method of preserving a fresh food selected from the class consisting of vegetables, fruits and berries, comprising storing the fresh food in a closed receptacle, subjecting the fresh food stored in said closed receptacle to refrigeration at a temperature within the approximate range 35° F. to 50° F. . . .

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

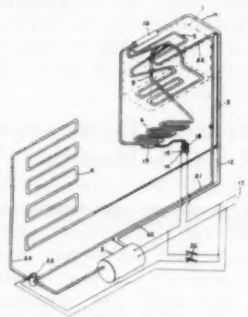
2,894,846. METHODS OF AND APPARATUS FOR PRESERVING FRESH FOODS. Edgar S. Stoddard, Berwyn, Ill., assignor to General Electric Co., a corporation of New York.



1. The method of preserving a fresh food selected from the class consisting of vegetables, fruits and berries, comprising storing the fresh foods within a receptacle arranged within the refrigerated storage compartment of a household refrigerator, and simultaneously subjecting the stored fresh food to irradiation. . . .

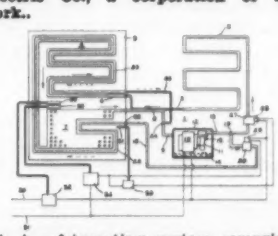
Week of July 21

2,895,306. HOT GAS DEFROST SYSTEM INCLUDING BYPASS-SUCTION LINE HEAT EXCHANGE. Bruce B. Latter, Louisville, Ky., assignor to General Electric Co., a corporation of New York.



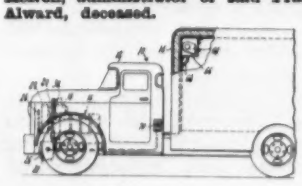
1. A refrigerating system comprising a compressor, a condenser, a capillary tube flow restricting element, a freezer evaporator for cooling a frozen food compartment, a fresh food evaporator for maintaining a fresh food compartment at above-freezing temperatures and a suction line, said compressor, condenser, capillary tube element, freezer evaporator, fresh food evaporator and suction line being connected in series in a closed refrigerating circuit. . . .

2,895,307. REFRIGERATING SYSTEM INCLUDING A HOT GAS DEFROSTING CIRCUIT. Clyde J. Nonomaque, Louisville, Ky., assignor to General Electric Co., a corporation of New York..



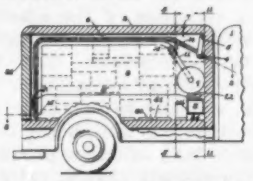
1. A refrigerating system comprising a hermetic compressor unit including a casing and a compressor and a motor for driving said compressor sealed within said casing, a condenser, a fixed flow restrictor, and an evaporator, conduit means connecting said compressor, condenser, fixed flow restrictor, evaporator and casing to form a closed series-flow refrigerating circuit in which said compressor withdraws low pressure refrigerant from said evaporator and through said casing and discharges high pressure refrigerant to said condenser. . . .

2,895,308. MOTOR VEHICLE REFRIGERATION SYSTEM. Francis Alward, Cambridge, Mass.; Robert F. McNeil, administrator of said Francis Alward, deceased.



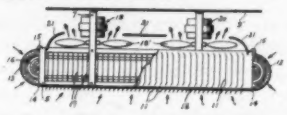
1. In a motor vehicle having an internal combustion engine and a cargo storage space adapted to be refrigerated, said engine having a crank shaft, in combination with said engine and shaft an over-running clutch having its inner member keyed to said shaft, a fan for the engine, a generator for supplying current to the regular vehicle electrical system, a refrigerating compressor. . . .

2,895,309. REFRIGERATION EQUIPMENT FOR INSULATED TRUCKS AND VEHICLES. Robert H. Kuhlmeier, Rockford, Ill.



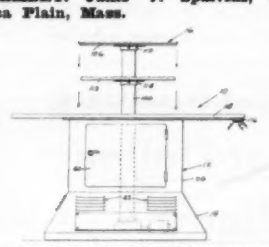
5. A refrigerating chamber having a floor and surrounding walls and a service door at one end, a single flexible blanket of insulating material reaching the full width of said chamber extensible substantially horizontally from the other end of said chamber toward the door end so as to be held by gravity in more or less close relationship to the top of the material to be refrigerated. . . .

2,895,310. MOTOR-VEHICLE AIR-CONDITIONING SYSTEM. Mortimer Benisch, Tucson, Ariz.



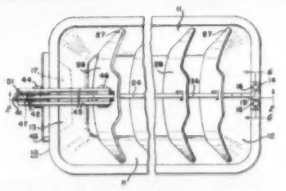
1. In a motor-vehicle air-conditioning system of the compressor-condenser-evaporator type, a rectangular-shaped condenser, a framework constituting a housing for the condenser, means for suspending the framework underneath the vehicle from the floorboard or chassis thereof, closure members for the sides and bottom of the framework provided with louvres which face in the same direction towards the front end of the vehicle. . . .

2,895,311. REFRIGERATION TABLE ASSEMBLY. Janis V. Spalvins, Jamaica Plain, Mass.



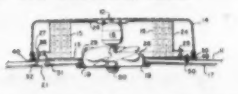
1. In a combined refrigerator and table assembly, a refrigerator cabinet having a sidewall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall. . . .

2,895,312. ICE CUBE TRAY. Arthur J. Frei and Raymond C. Davis, Dayton, Ohio, assignors to General Motors Corp., Detroit.



1. A freezing device comprising in combination, a tray, a grid disposed in said tray, said grid including a rigid longitudinal partition and a plurality of spaced apart one-piece walls extending continuously across said tray and being interlocked with said partition for tilting movement with respect thereto. . . .

2,895,313. AIR CONDITIONER EVAPORATOR UNIT. Ralph J. Flick, Inkster Village, Mich., assignor to Ford Motor Co., Dearborn, Mich.



1. An air conditioner evaporator unit for mounting on the turret of a motor vehicle passenger compartment comprising a base having a periphery defined by an upwardly turned lip, said base provided with a central opening defined by an upwardly turned lip and a plurality of smaller openings radially spaced from said central opening, each of said smaller openings defined by an upwardly turned lip, an evaporator coil disposed on said base between said central opening and said smaller openings, a blower disposed within said coil and arranged to discharge through said central opening. . . .

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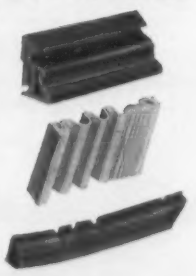
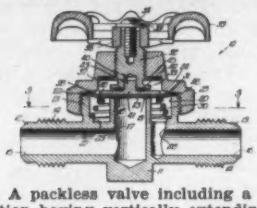


Investigate GI's Hypalon double-extruded appliance tubing; extra-resistant to oxidation and chemical deterioration.

GI COMPANY
GEAUGA INDUSTRIES CO.
A Subsidiary of Carlisle Corporation
MIDDLEFIELD, OHIO

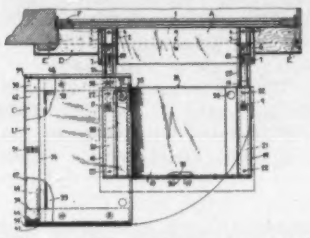
2,895,497. PACKLESS VALVE. Evan Jones, Evanston, Ill., assignor to Henry Valve Co., Inc., Melrose Park, Ill.



1. A packless valve including a body portion having vertically extending inner and outer spaced annular walls, the top radial edge of said inner wall defining a valve seat which is positioned slightly below the top radial edge of said outer wall, said walls being of substantial axial length and defining therebetween a valve chamber of substantial size having a bottom annular wall connecting said inner and outer walls. . . .

2,895,699. AIR CONDITIONER UNIT MOUNTING. Louis Lidsky, Jamaica Estates, N. Y., assignor to The L and P Electric Co., Inc., Maspeth, N. Y.

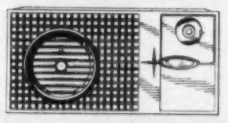
8. An air conditioner unit adjustable mounting comprising a foundation assembly having a base plate adapted to be secured on a window sill and provided with laterally spaced substan-



tially parallel guideway components rigidly secured to said plate and extending forwardly thereof.

DESIGNS

185,700. FRONT PANEL FOR A ROOM AIR CONDITIONER. Philip S. Egan, Glenview, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.



Servicing Automobile Air Conditioners

(Vol. 4 — 1959 Models)

BY C. DALE MERICLE

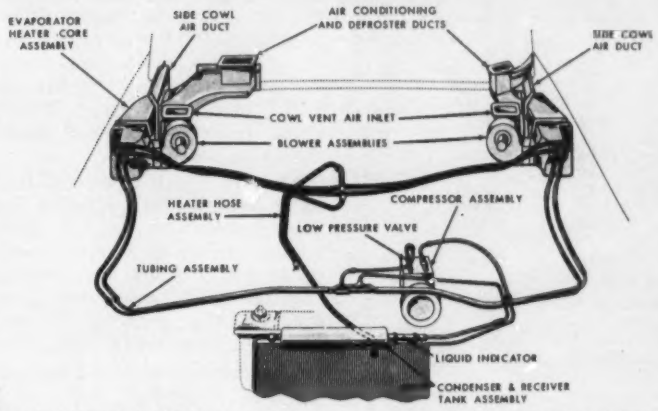


FIG. 1—General layout of air conditioning system for 1959 Lincoln and Continental Mark IV cars. Two evaporator-heater assemblies are provided.

LINCOLN (1)

M-E-L Div.
Ford Motor Co.
Dearborn, Mich.

Factory-installed air conditioner employed on 1959 Lincoln and Continental Mark IV cars is a cowl-type system (Fig. 1) using a compressor driven through a magnetic clutch which is cycled by thermostats to control temperature and prevent evaporator icing.

Two evaporators are used; thermostat and air damper settings are controlled by an electric servo mechanism, and ducts are provided to supply air to rear seat passengers.

Refrigerant-12 is employed.

Compressor

The two-cylinder compressor used is driven through a magnetic clutch.

Service valves are mounted on the compressor.

Condenser

Condenser is located in front of the car radiator.

A combination receiver and dehydrator is installed horizontally in front of the condenser at the top.

Sight glass is located at the receiver outlet.

Evaporator Assembly

Two evaporators are used. Each has its own thermostatic expansion valve. They are mounted beneath each of the front fenders behind the wheel housing shields. Each is insulated by a case, which also contains the heater core, and is protected by the fender splash aprons. There is a separate blower for each evaporator-heater assembly.

(Because evaporator and heater cores are in the same housings, at least 2 qts. of permanent anti-freeze should be kept in engine cooling system at all times to prevent freezing of heater core when air conditioner is in use.)

Cooled air is discharged into the front passenger compartment from outlets in the face of the instrument panel, one at the extreme left and one double register on the right center of the dash.

These are manually controlled, and the cooled air may be directed through the outlets in the face of the dash or up to the windshield area through the windshield defroster ducts by pushing the control knobs.

Cooled air for the rear passenger compartment is directed through ducts in the cowl side trim panels and front door arm rests and is discharged through adjustable outlets in the rear of the front door arm rests.

A slight amount of air is also directed toward the floor in the front passenger compartment from fixed outlets on the cowl side trim panels.

The cooling system operates on 100% recirculated air.

(To Be Continued)

Holiday 'Reprieve' Promised Redisco Instalment Buyers

DETROIT—Homemakers who buy appliances and other household furnishings on a new instalment plan will never have to make a payment during the "tight money" holiday months of December and January, according to C. M. Manasco, vice president of Redisco, Inc.

The "Happy Holiday Purchase Plan," a time-payment plan for all Kelvinator appliance dealers, was announced by Manasco. The financing company is a subsidiary of American Motors Corp.

"This new instalment plan allows the homemaker to buy on a three-year credit schedule without running into a temporary financial jam each year during the holiday period," Manasco said. "December and January instalments will never be scheduled during the life of the contract when written under the terms of our new plan," Manasco said.

In addition, contracts written in November and December may schedule the first payment as far in advance as the corresponding date in February, but no later than Feb. 20, 1960, enabling the customer to clear up Christmas bills before the first instalment comes due, Manasco said.

No down payment is required for any Kelvinator appliance when purchased on the new plan if the contract is initiated between the effective date, Nov. 10, and Dec. 24.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

COMMERCIAL LOW pressure refrigeration service man, now self employed, desires employment with progressive refrigeration company, or maintenance firm. Twenty years experience, available about February. Florida area favored. Please reply to BOX A6408, Air Conditioning, Heating & Refrigeration News.

SERVICE EXECUTIVE with broad industry experience in major appliances; commercial; industrial & air conditioning equipment to 125 tons, desires field service engineer, or service-sales position. Excellent reputation in conducting sales-minded service contracts with distributors, customers, sales representatives, dealers & national accounts. Exceptional training ability in formal & on-the-job service schools. Talents include accomplished public speaking, and extensive public relations experience. Mature, intelligent, personable, and will travel. BOX A6410, Air Conditioning, Heating & Refrigeration News.

AIR CONDITIONING Engineer—Graduate mechanical engineer; 10 years' experience in development and design of water, air, and evaporative cooled equipment from 2 thru 75 tons. Both direct expansion and water chillers. Commercial and residential. Last five years as chief engineer. Far west or south first preference. BOX A6414, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

DISTRIBUTORS: MANUFACTURER of refrigerated, self-service milk cabinet especially designed for school and institutional use, needs qualified distributors. Prefer dealers doing business with schools. Choice territories available. DISPLAY-O-MATIC, INC., P. O. Box 338, Bradenton, Florida.

MANAGER FOR Carrier wholesale distributor. Requires hard work, management ability, sales and engineering background. Provides opportunity to build and grow with the business to match your own efforts. Established company, medium-sized territory, Northwest Ohio and Northeast Indiana. Our references: Carrier Corporation and Ohio Citizens Trust Company. Please write your qualifications briefly if interested in talking together. James Hausman, THE HAUSMAN STEEL COMPANY, 300 Sandusky Street, Toledo, Ohio.

AIR CONDITIONING and heating service man. Knowledge of control wiring, air distribution, heating and refrigeration cycle of water cooled, air cooled and heat pump equipment. We install and service all makes of heating and air conditioning equipment. Permanent employment for right man. Send qualifications to LA BREA HEATING & AIR CONDITIONING COMPANY, P. O. Box 922, ORegon 9-3491, Inglewood 3, California.

FIELD SERVICE Engineer—Our company is growing and expanding. We need and have opportunity for a capable, experienced, refrigeration service man, under 40 years to handle field service engineer responsibilities in limited territories in New England and Middle Atlantic States. Must be free to travel. Food store experience preferred. Willing to move at our expense, if necessary. High school (or better) education. Give full details, with five references, and send photograph with first letter. Applications without photographs will not be considered. Salary, expenses, insurance, welfare, and other benefits. BOX A6402, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER to sell heat transfer coils to manufacturers of heating, air conditioning and refrigeration equipment in Ohio, Indiana and Kentucky. Leading manufacturer can offer excellent salary, expenses, bonus and liberal benefits to right man. Engineering degree and sales experience preferred. Send full details to BOX A6407, Air Conditioning, Heating & Refrigeration News.

MANUFACTURER'S AGENTS—Our full line of light commercial and residential heating and air conditioning equipment is open in the states of Ohio, Indiana, Alabama. We are an old line company, AAA rated and financially responsible. Our product is excellent and priced to sell in today's market. We want to connect with a top flight agent organization now actively covering the trade and one who has a real following among distributors, dealers and contractors who service the air conditioning field. If you feel you can offer what we want and wish to connect with a progressive company we will appreciate your prompt answer directed to BOX A6409, Air Conditioning, Heating & Refrigeration News.

EXECUTIVE SALES position in refrigeration equipment with AAA rated national manufacturer. Areas in Ohio, Texas, New Jersey, and Illinois. Experience in commercial refrigeration sales and sales to refrigeration jobbers desirable. Complete compensation plan includes salary, bonus, and expenses. Send resume. All replies kept strictly confidential. BOX A6412, Air Conditioning, Heating & Refrigeration News.

DESIGN ENGINEER—Degree in mechanical engineering or equivalent in science required. Successful applicant will be 4 to 5 years out of college with experience in air handling phase of air conditioning industry. Assignment will be development of air handling units and some water and direct expansion, plus coil heat transfer work. Midwest location. Please submit complete resume to BOX A6413, Air Conditioning, Heating & Refrigeration News.

REFRIGERATION ENGINEER to assume complete charge of the design and development of residential refrigerators wanted by West Coast manufacturer. State age, past experience, education, and salary requirements. Our engineers know of this ad. Reply to: BOX A6415, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

TULANE UNIVFRSITY has the following used equipment for sale: (2) 185 ton Worthington Centrifugal Compressors driven by 200 h. p., 208 Volt, 3 phase electric motors with auxiliary equipment. Used three seasons. (2) 60 ton Westinghouse, Semi-Hermetic Compressors, driven by 60 h. p., 220 Volt, 3 phase electric motors with control panels. Information as to price and condition may be obtained by contacting George Johnson, Supt. of Phy. Plant, TULANE UNIVERSITY, New Orleans, La.

WANTED

DEALERS FOR THE NOVI DELUXE AUTOMOBILE AIR CONDITIONERS

NOVI NO. 1 QUALITY PERFORMANCE PRICE

Superior Cooling
Beautiful Design Advanced Engineering
Greatly Reduced Installation Time

Adapter kits packaged and sold separately for greater flexibility in sales. Five Novi warehouses assure fast delivery and lower inventory investment.

90 DAY WARRANTY ON PARTS

SPECIAL DEALER PRICE **$182.50** Complete with clutch Federal Excise Tax included.

F.O.B. nearest Novi warehouse

NOVI SALES AND SERVICE CO., INC.

WAREHOUSES: 2501 South Grand Avenue, Los Angeles, Calif. • 2112 West 7th Street, Fort Worth, Texas • 2932 Troost Avenue, Kansas City, Missouri 20830 Coolidge Hwy, Detroit, Mich. • 190 Fourteenth St., N.W., Atlanta, Ga.

ARI Statistics on Unitary Air Conditioner Shipments for First 9 Months of 1959

JANUARY-SEPTEMBER, 1959 (9 months)
YEAR-TO-DATE

SIZE	— By Condenser Type — Air or Evaporatively Cooled	Water Cooled	Total Units	% Change from 1958
Under 27,000 B.t.u./hr.	36,950	678	37,628	+ 48%
27,000-32,999 B.t.u./hr.	17,314	436	17,750	+ 26%
33,000-41,999 B.t.u./hr.	70,810	10,636	81,446	+ 56%
42,000-53,999 B.t.u./hr.	22,216	566	22,782	+117%
54,000-64,999 B.t.u./hr.	25,156	12,125	37,281	+ 31%
65,000-96,999 B.t.u./hr.	11,456	6,918	18,374	+ 31%
97,000-134,999 B.t.u./hr.	4,665	5,789	10,454	+ 30%
135,000-184,999 B.t.u./hr.	912	3,260	4,172	+ 19%
185,000-249,999 B.t.u./hr.	590	1,517	2,107	+ 7%
250,000-319,999 B.t.u./hr.	112	1,187	1,299	+ 25%
320,000-379,999 B.t.u./hr.	112	790	902	+ 83%
380,000 B.t.u./hr. & over	65	184	249	+ 77%
TOTAL	190,358	44,086	234,444	+ 47%

This condensed summary by size includes shipments of:

1. Air conditioners (except window and wall types)—With or without condensers and refrigeration chassis.
2. Year-round air conditioners—With or without condensers.
3. Heat pumps (except room air conditioners). Self-contained and other than self-contained.
4. Split systems—air conditioning condensing units **only**. It does **not** include shipments of air conditioning coils with or without blowers.

EXPORT SHIPMENTS—The totals include export shipments of 5,942 units for January-September, 1959.

Gas Heating Sales--

(Concluded from Page 1, Col. 3)

full-year's production, the highest now on record.

Edward R. Martin, GAMA's director of marketing and statistics, said that furnaces, including both forced warm air and gravity types, accounted for 130,900 sales in October, a 22.2% increase over the 107,100 units reported for the same month of 1958.

The ten-month figure for furnaces was 904,600, a 28.7% increase over the 702,700 units sent to market in the same period of last year. Martin observed that the previous full-year high for gas-fired furnaces, 874,400, had been recorded in 1955.

Shipments of gas-fired boilers, used in residential hot water and steam heating systems, numbered 18,500 for the month, up 1.1% from 18,300 units dispatched in the same month of last year. The ten-month totals for this equipment were 118,600 for this year and 105,900 for last year, a 12% increase.

Gas conversion burners were 27.7% ahead of October, 1958. Last month, shipments of this equipment amounted to 26,300, compared to 20,600 for the same month of last year. This year's ten-month total was 135,600, up 7.9% from the 125,700 reported for the same period of 1958.

Other types of gas-fired heating equipment were shipped as follows:

Vented recessed wall heaters sent to market in October amounted to 53,500 units, a decrease of 6.3% from the 57,100 dispatched the same month of last year. This year's ten-month total, however, held to an 18% lead over 1958. The figures were 372,500 this year and 315,600 last year.

October shipments of room heaters and other types of direct heating equipment numbered 222,200, down 8.6% from last year's 243,000. The ten-month total for this equipment also retained a 5% lead over last year. The amounts were 1,222,600 for 1959 and 1,164,000 for last year.

Floor furnace shipments in October totaled 16,500, a decrease of 10.3% from last year's 18,400. The ten-month totals were 86,100 for this year and 84,500 for 1958, a 1.9% increase.

Unit heaters and duct furnaces, used mainly in commercial and industrial installations, numbered 20,900 for October, up 28.2% from the 16,300 reported a year ago. The ten-month total for this year, 127,300, was 20.2% higher than last year's 105,900.

Martin's report is based on a survey of manufacturers who account for a majority of the output in each category, with the responses expanded to show national shipment totals.

Shipments--

(Concluded from Page 1, Col. 4)

first three quarters. Accompanying coils with blower rose 82%, while coils without blower were up 78%.

Complete details of the release, giving shipments by size and type of unitary air conditioner, will be carried in a subsequent issue of the NEWS. The above table is a condensed summary by size of manufacturers' shipments for the January-September, 1959 period.

Jennings Opens Manufacturers' Sales Agency

JACKSON, Mich. — John H. Jennings, associated with the refrigeration and air conditioning industry for the past 25 years, recently announced the opening of a manufacturers' sales agency under his name in Michigan.

Jennings was vice president in charge of engineering for Addison Products Co. of Addison, Mich. immediately prior to entering this sales field.

Other positions he has held include Air Conditioning Div. manager of Mitchell Mfg. Co., chief engineer for all air conditioning for Servel, Inc., and director of engineering for Bryant Div. of Carrier Corp.

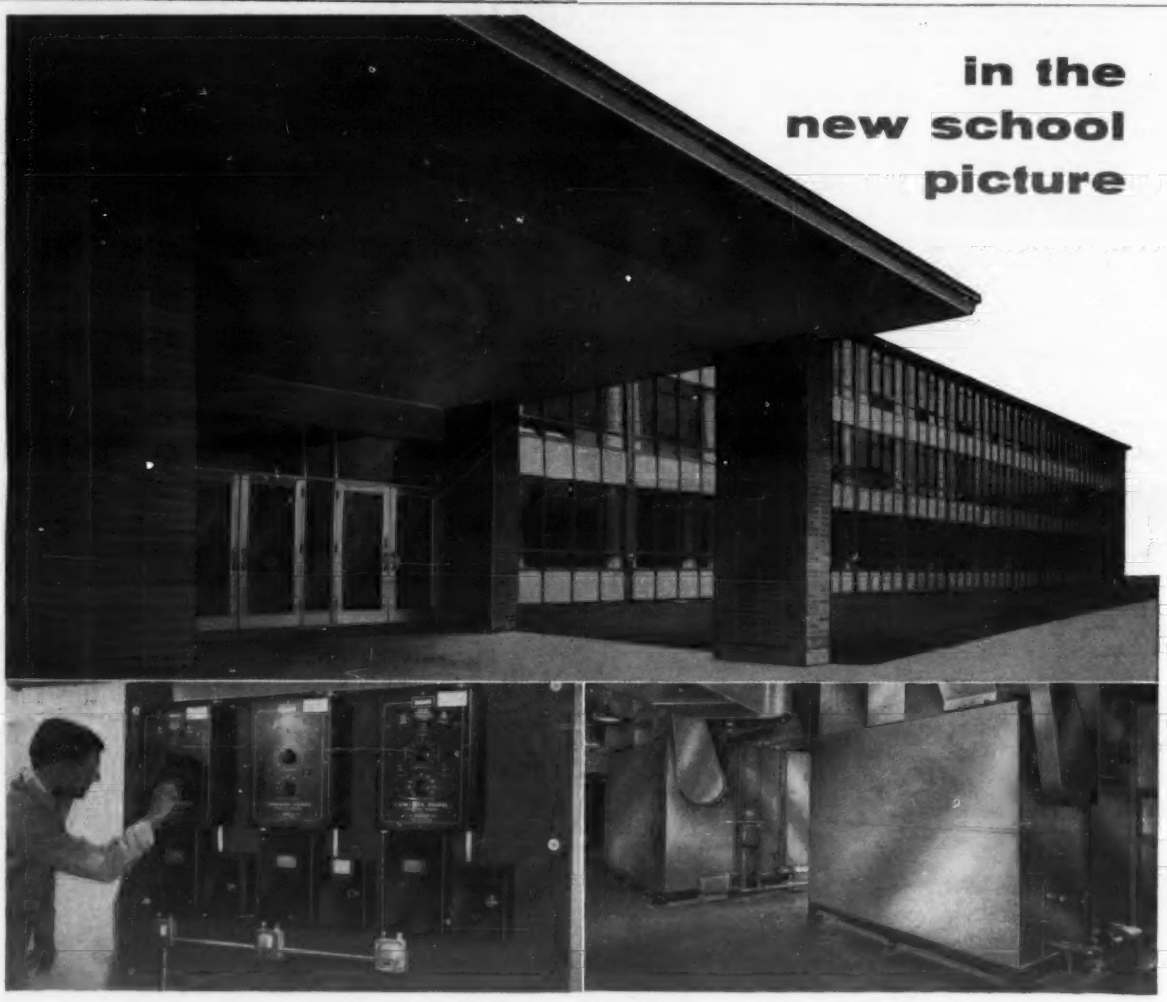
Meier Electric Co.'s propeller fan line is handled for Michigan and a part of northern Indiana.

In conjunction with Ollie J. Kesti of Pontiac, Mich., Jennings covers Indiana, Ohio, and a part of Michigan for York Corp.'s O.E.M. line of hermetic compressors. York's hermetically sealed truck refrigeration system is included in the York coverage.

Edwards Engineering Corp.'s O.E.M. products, co-axial condensers, and finned tube condensers are represented for Michigan, Indiana, and Ohio.

John A. Darts Dies

NEW YORK CITY—John A. Darts, 75, a director and former executive vice president of Fitzgibbons Boiler Co., Inc., died recently at the Columbia-Presbyterian Medical Center after a short illness. He joined the firm in 1916 and retired in 1955.



Dunham-Bush solves your Heating-Air Conditioning problems

At the recently opened, beautiful new three million dollar Regina Dominican Catholic High School in Wilmette, Illinois, there's a lesson to be learned by anyone connected with school building or modernization.

The problem: How to achieve economy and dependability in school heating?

The answer: Install, as they did in Wilmette, heating products from one-source—one-responsibility . . . Dunham-Bush, Inc.

Discuss your building problems and answers with your nearby Dunham-Bush sales engineer. The following did to complete satisfaction of building team, school authorities, pupils and parents: Architect, Barry & Kay; Consulting Engineer, Wm. T. Brookman; Contractor, Dearborn Plumbing & Heating; Wholesaler, James B. Clow.

DUNHAM-BUSH PRODUCTS AT REGINA DOMINICAN HIGH SCHOOL
VARI-VAC DIFFERENTIAL HEATING CONTROLS
FIN TUBE RADIATION
CABINET UNIT HEATERS
TRAPS AND VALVES
CONDENSATION AND VACUUM PUMPS
AIR HANDLING UNITS FOR AIR CONDITIONING

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AIR CONDITIONING • REFRIGERATION • HEATING • HEAT TRANSFER
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